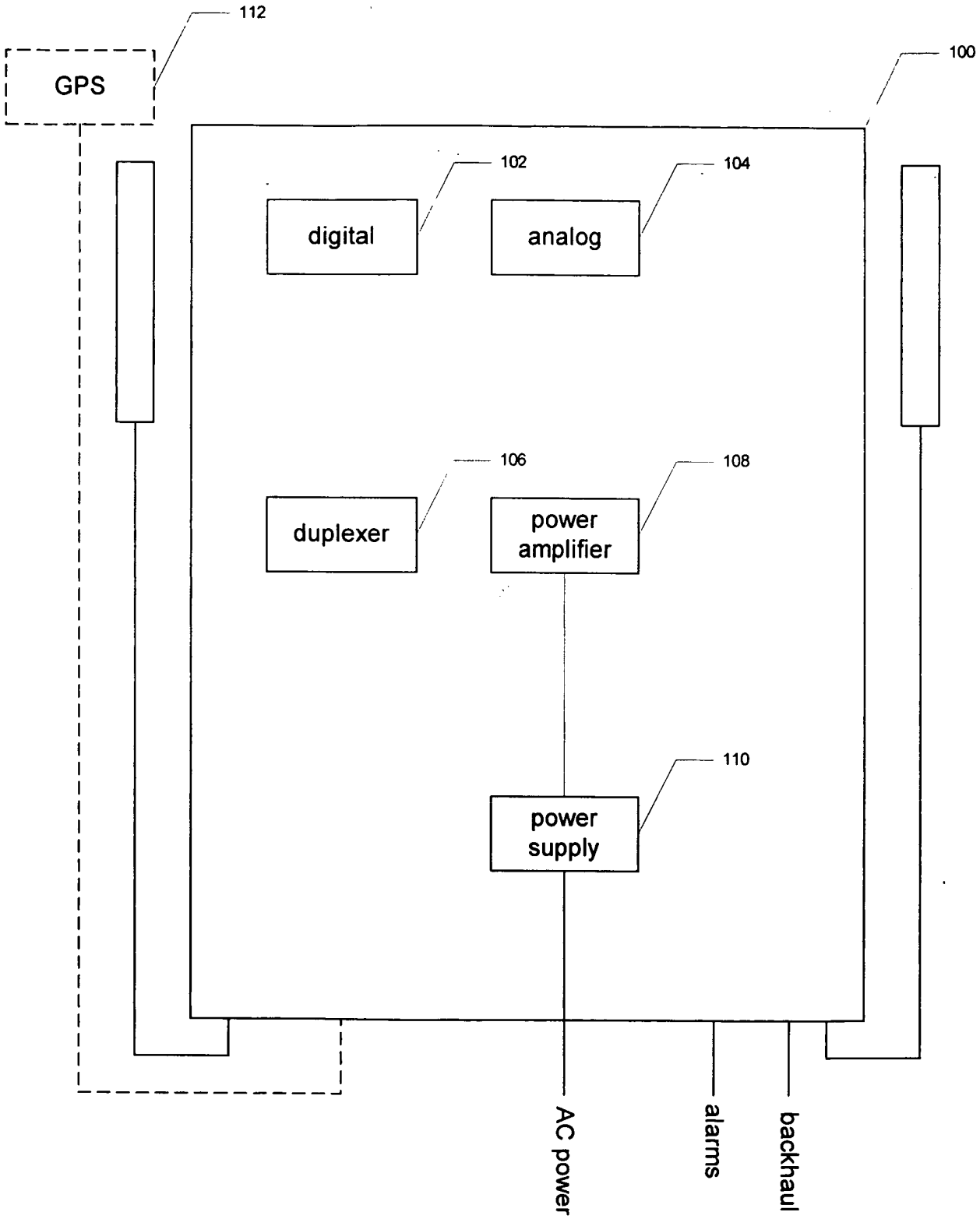

112
GPS
100
102
digital
104
analog
106
duplexer
108
power amplifier
110
power supply
AC power
alarms
backhaul

FIG. 1

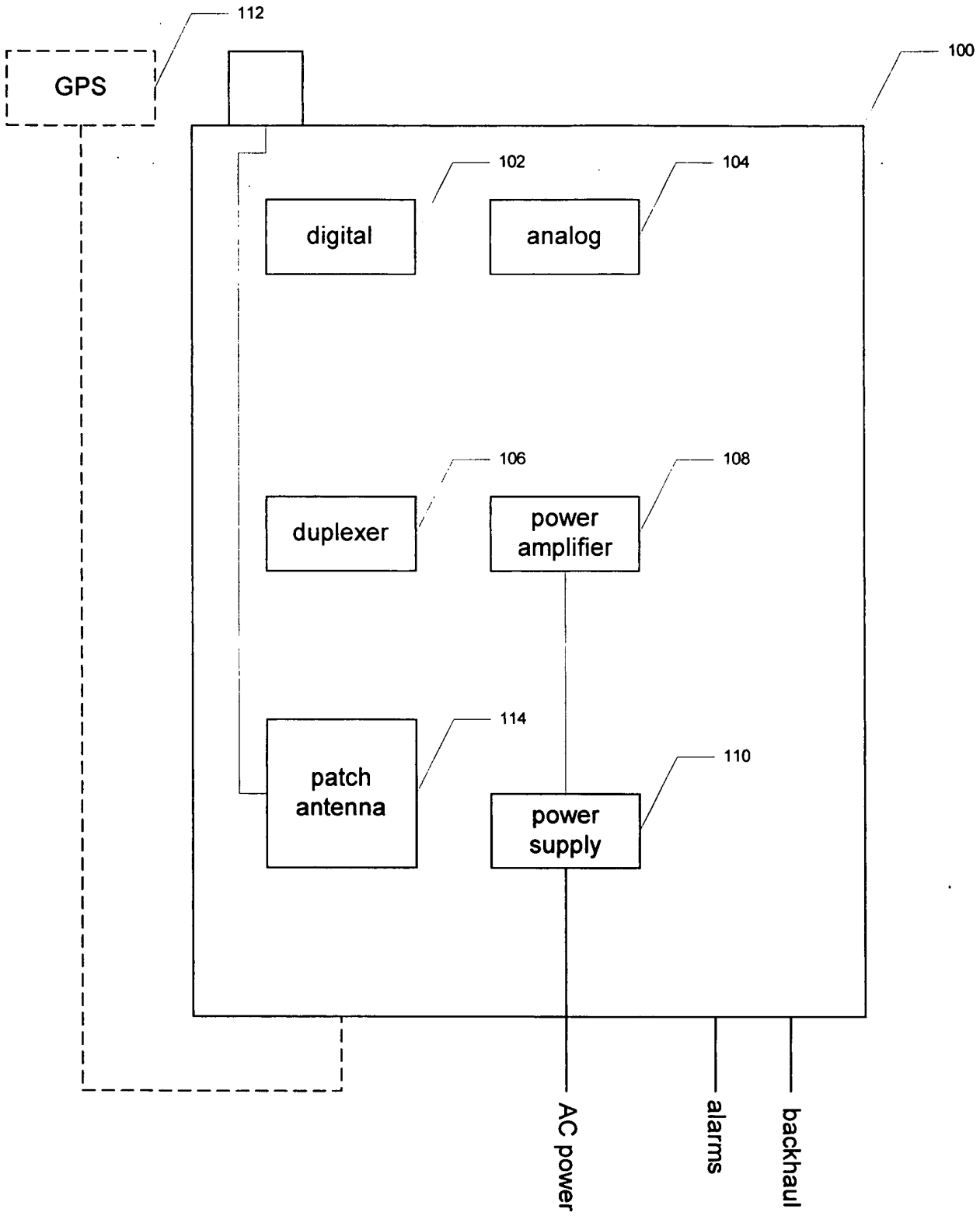

GPS
112
100
digital
102
analog
104
duplexer
106
power amplifier
108
patch antenna
114
power supply
110
AC power
alarms
backhaul

FIG. 2

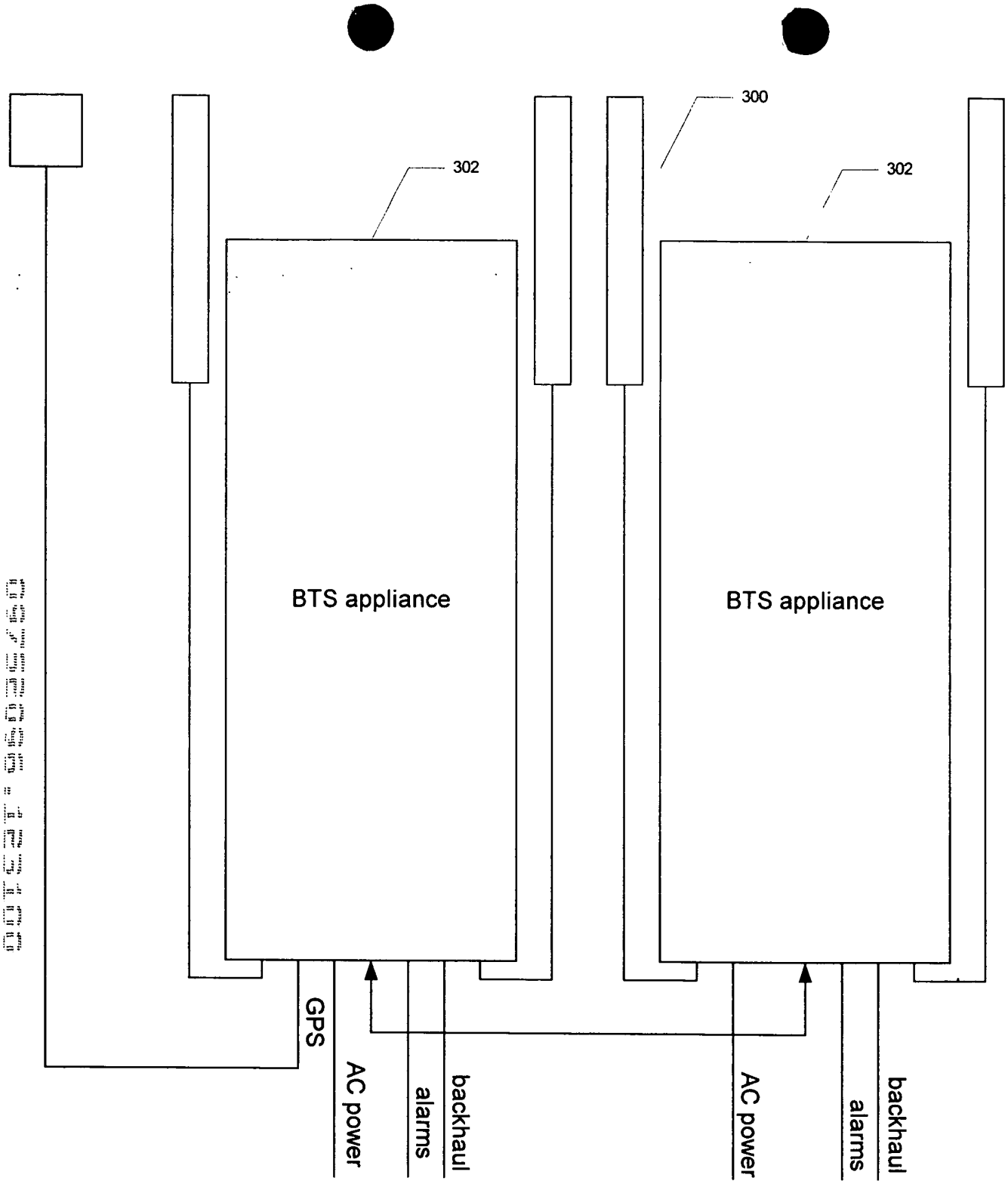

300
302
302
BTS appliance
BTS appliance
GPS
AC power
alarms
backhaul
AC power
alarms
backhaul

FIG. 3

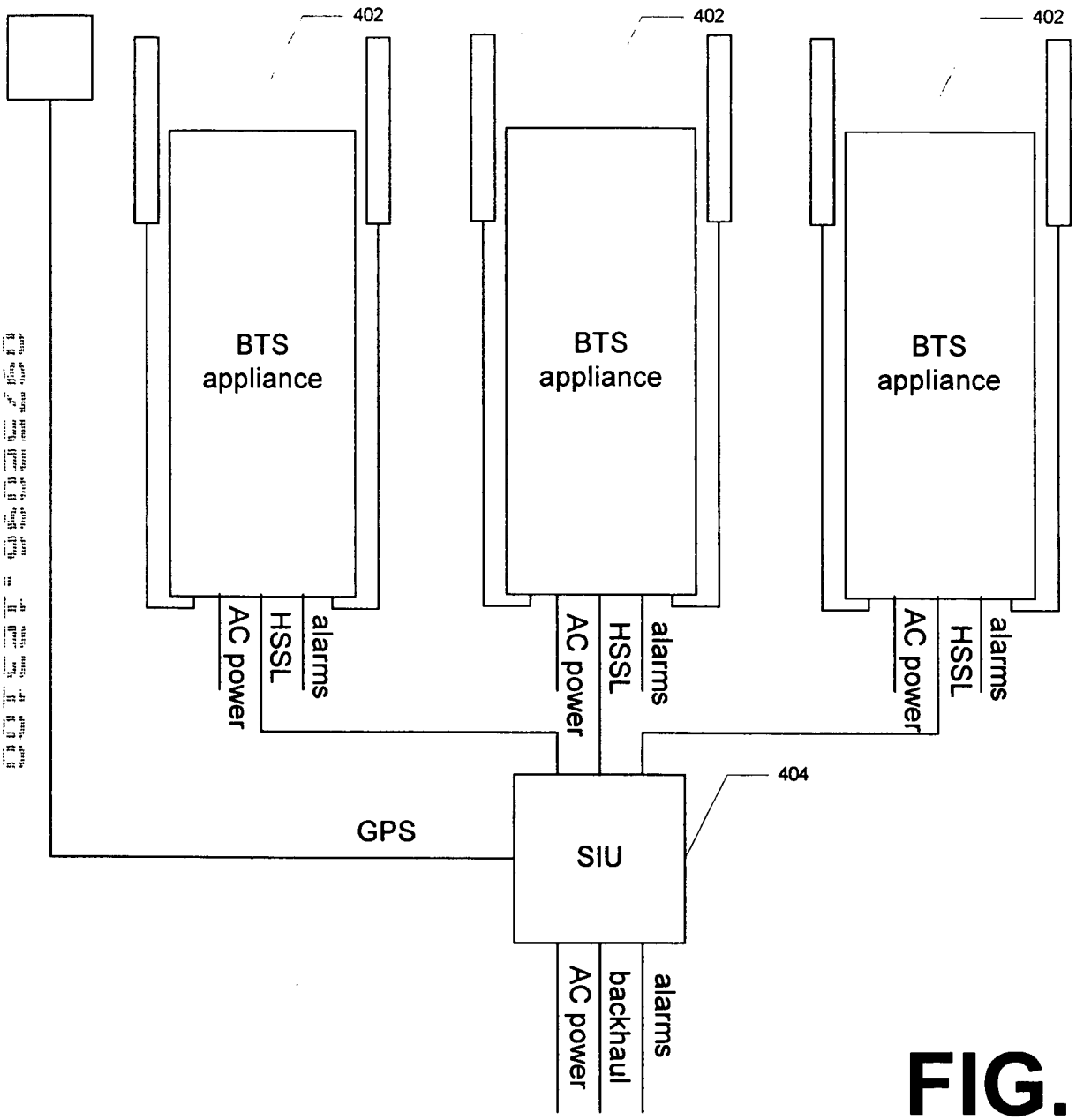

402
402
402
BTS appliance
BTS appliance
BTS appliance
AC power
HSSL
alarms
AC power
HSSL
alarms
AC power
HSSL
alarms
404
GPS
SIU
AC power
backhaul
alarms

FIG. 4

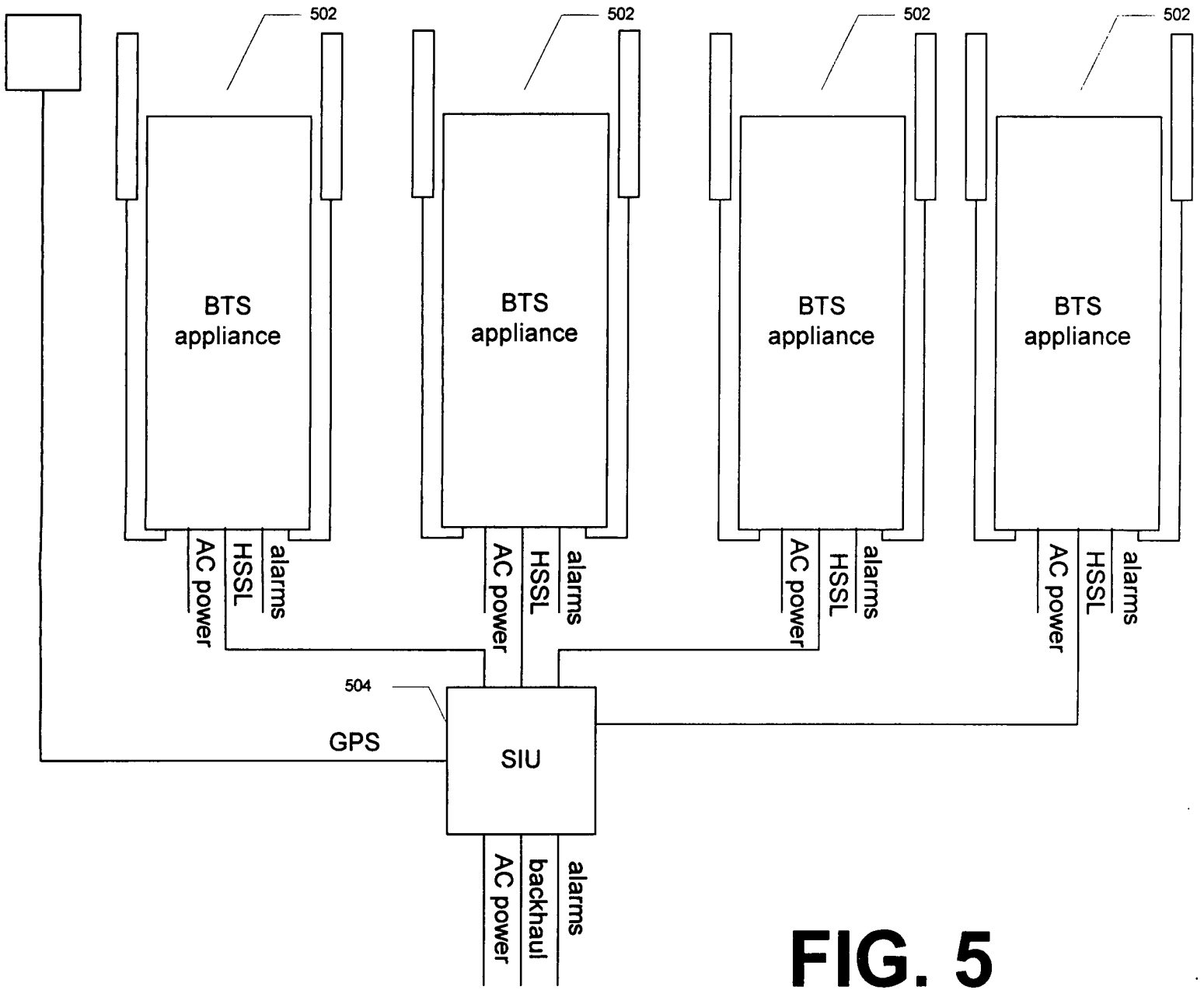

502
502
502
502
BTS appliance
BTS appliance
BTS appliance
BTS appliance
AC power
HSSL
alarms
AC power
HSSL
alarms
AC power
HSSL
alarms
AC power
HSSL
alarms
504
GPS
SIU
AC power
backhaul
alarms

FIG. 5

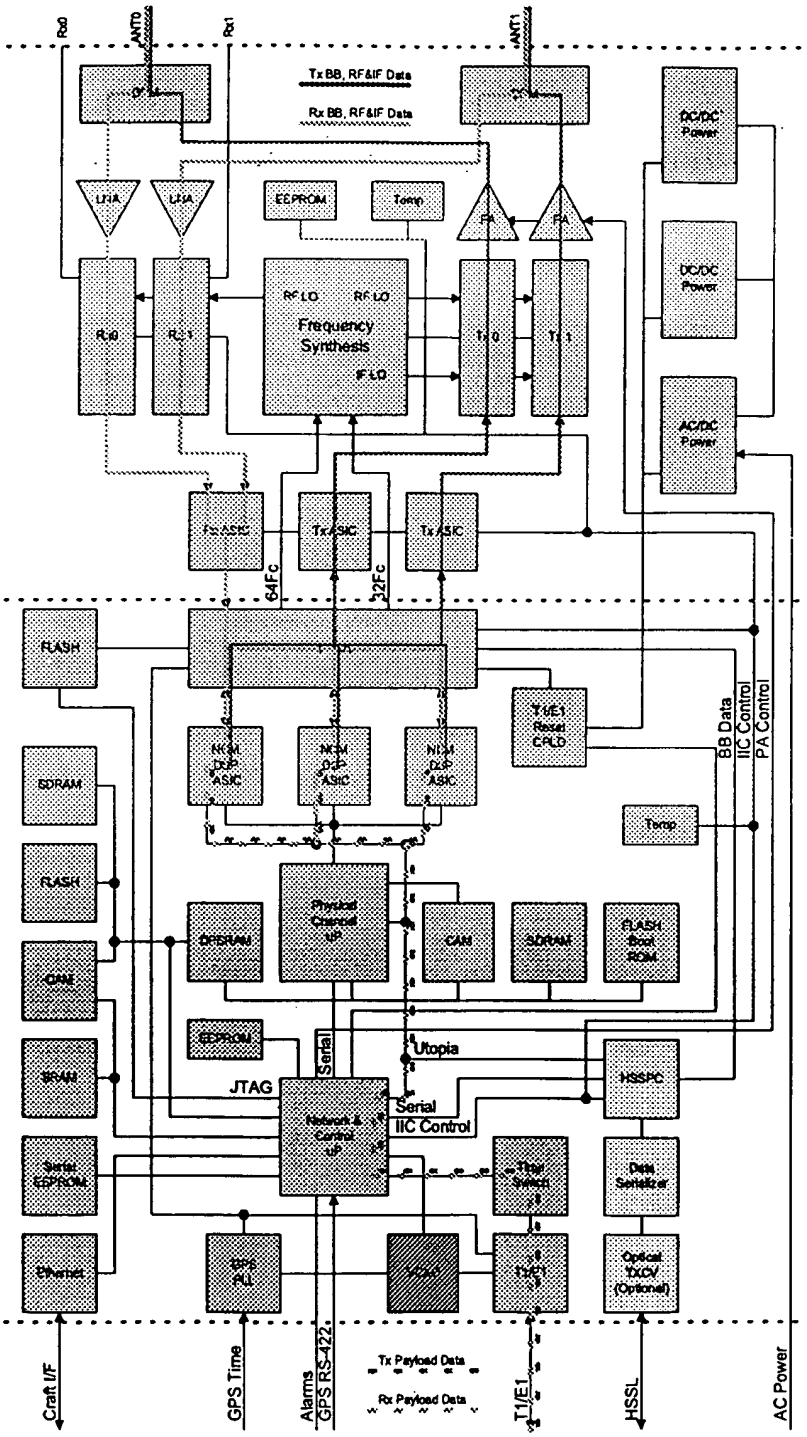

Rx0
ANT0
Rx1
ANT1
Tx BB, RF&IF Data
Rx BB, RF&IF Data
DC/DC Power
DC/DC Power
AC/DC Power
LNA
LNA
EEPROM
Temp
PA
PA
Rx 0
Rx 1
RF LO
RF LO
Frequency Synthesis
IF LO
Tx 0
Tx 1
Tx ASIC
Tx ASIC
Tx ASIC
64Fc
32Fc
FLASH
NCM DDP ASIC
NCM DDP ASIC
NCM DDP ASIC
T1/E1 Reset CPLD
BB Data
IIC Control
PA Control
SDRAM
Temp
FLASH
Physical Control uP
CAM
SDRAM
FLASH Boot ROM
DPDRAM
CAM
SRAM
EEPROM
Serial
Utopia
HSSPC
JTAG
Network & Control uP
Serial IIC Control
Serial EEPROM
Thyr Switch
Data Serializer
Ethernet
GPS PLL
T1/E1
Optical TX/CV (Optional)
Craft I/F
GPS Time
Alarms
GPS RS-422
Tx Payload Data
Rx Payload Data
T1/E1
HSSL
AC Power

FIG. 6

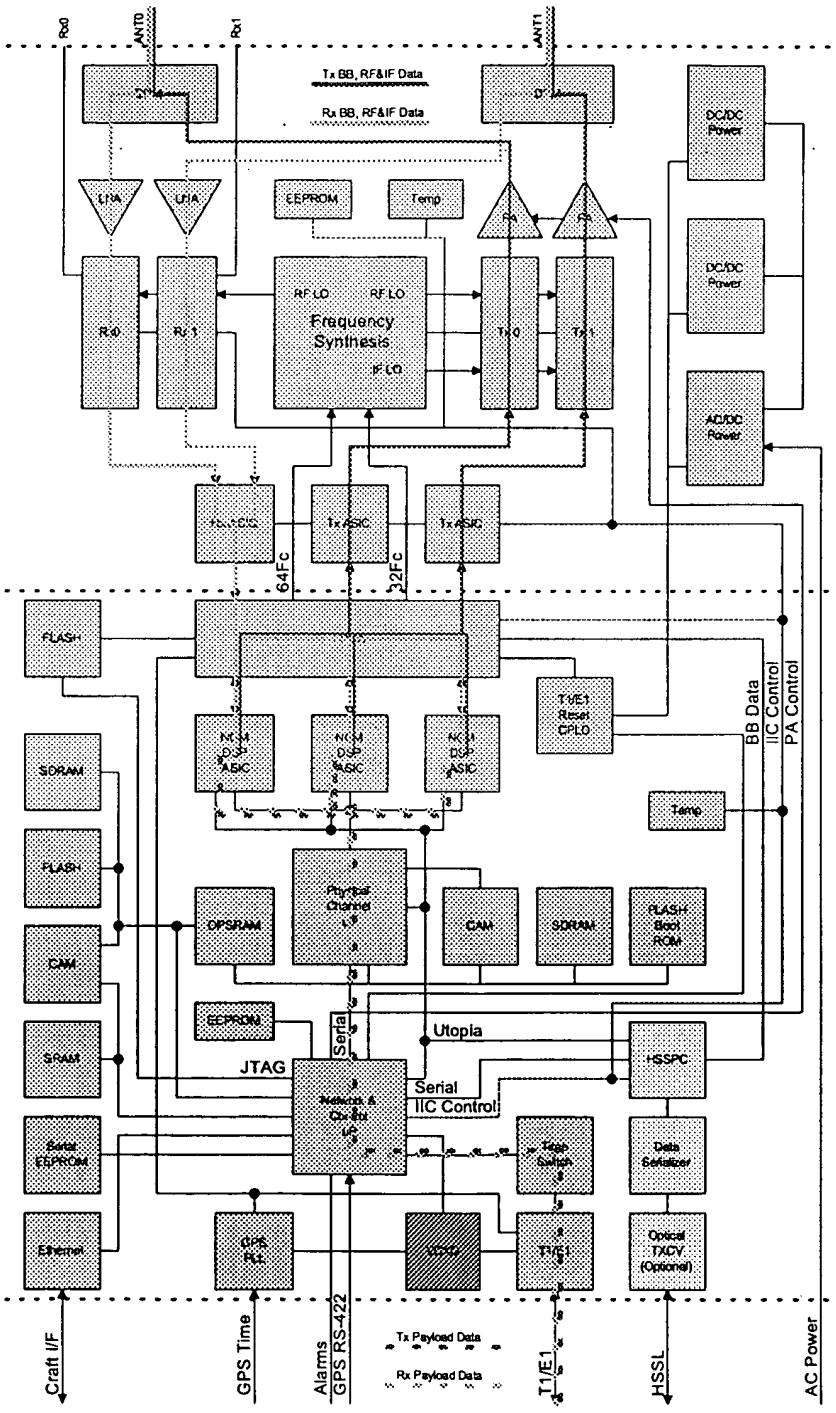

Rx0
ANT0
Rx1
ANT1
Tx BB, RF&IF Data
Rx BB, RF&IF Data
DC/DC Power
DC/DC Power
AC/DC Power
LNA
LNA
EEPROM
Temp
PA
PA
RF LO
RF LO
Frequency Synthesis
IF LO
R x 0
R x 1
T x 0
T x 1
Tx ASIC
Tx ASIC
64Fc
32Fc
FLASH
SDRAM
FLASH
CAM
SRAM
Serial EEPROM
Ethernet
NCM DSP ASIC
NCM DSP ASIC
NCM DSP ASIC
T1/E1 Reset CPLD
Temp
BB Data
IIC Control
PA Control
DPSRAM
Physical Channel I/F
CAM
SDRAM
FLASH Boot ROM
EEPROM
Serial
Utopia
JTAG
Network & Control I/F
Serial
IIC Control
HSSPC
Data Serializer
Optical TXCV (Optional)
Flash Switch
GPS PLL
VCXO
T1/E1
Craft I/F
GPS Time
Alarms
GPS RS-422
Tx Payload Data
Rx Payload Data
T1/E1
HSSL
AC Power

FIG. 7

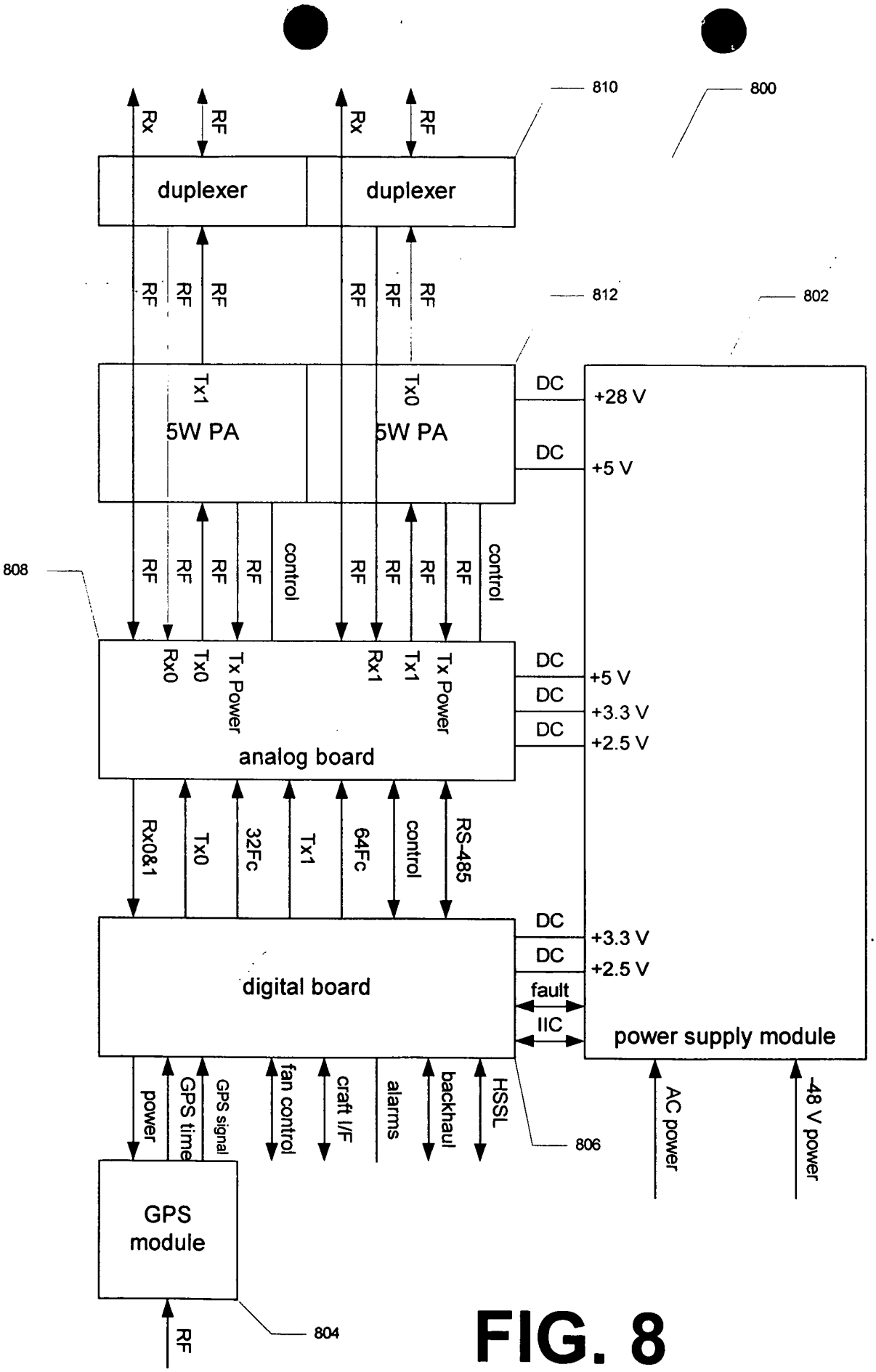

810
800
Rx
RF
Rx
RF
duplexer
duplexer
RF
RF
RF
RF
RF
RF
812
802
Tx1
5W PA
Tx0
5W PA
DC
+28 V
DC
+5 V
808
RF
RF
RF
RF
control
RF
RF
RF
RF
control
Rx0
Tx0
Tx Power
Rx1
Tx1
Tx Power
DC
+5 V
DC
+3.3 V
DC
+2.5 V
analog board
Rx0&1
Tx0
32Fc
Tx1
64Fc
control
RS-485
DC
+3.3 V
DC
+2.5 V
fault
IIC
digital board
power supply module
power
GPS time
GPS signal
fan control
craft I/F
alarms
backhaul
HSSL
806
AC power
-48 V power
GPS
module
804
RF

FIG. 8

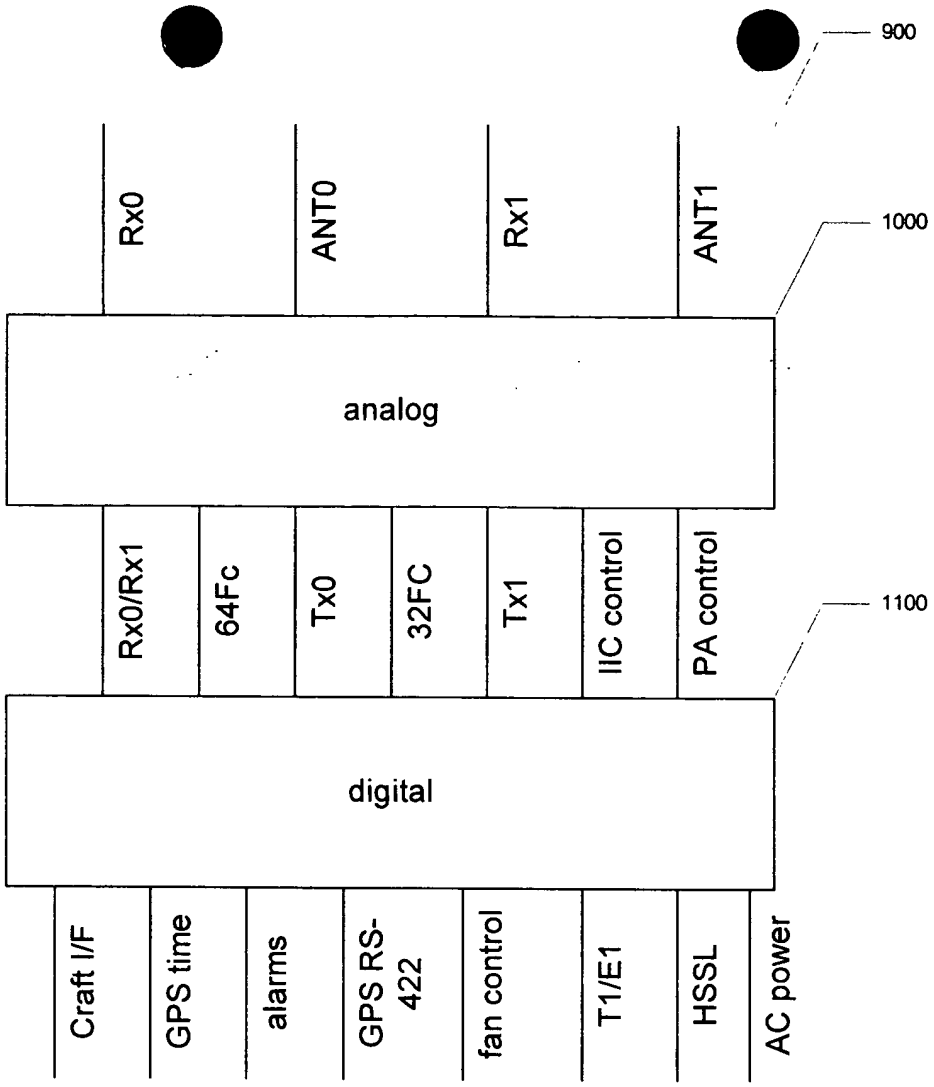

900
1000
1100
Rx0
ANT0
Rx1
ANT1
analog
Rx0/Rx1
64Fc
Tx0
32FC
Tx1
IIC control
PA control
digital
Craft I/F
GPS time
alarms
GPS RS-422
fan control
T1/E1
HSSL
AC power

FIG. 9

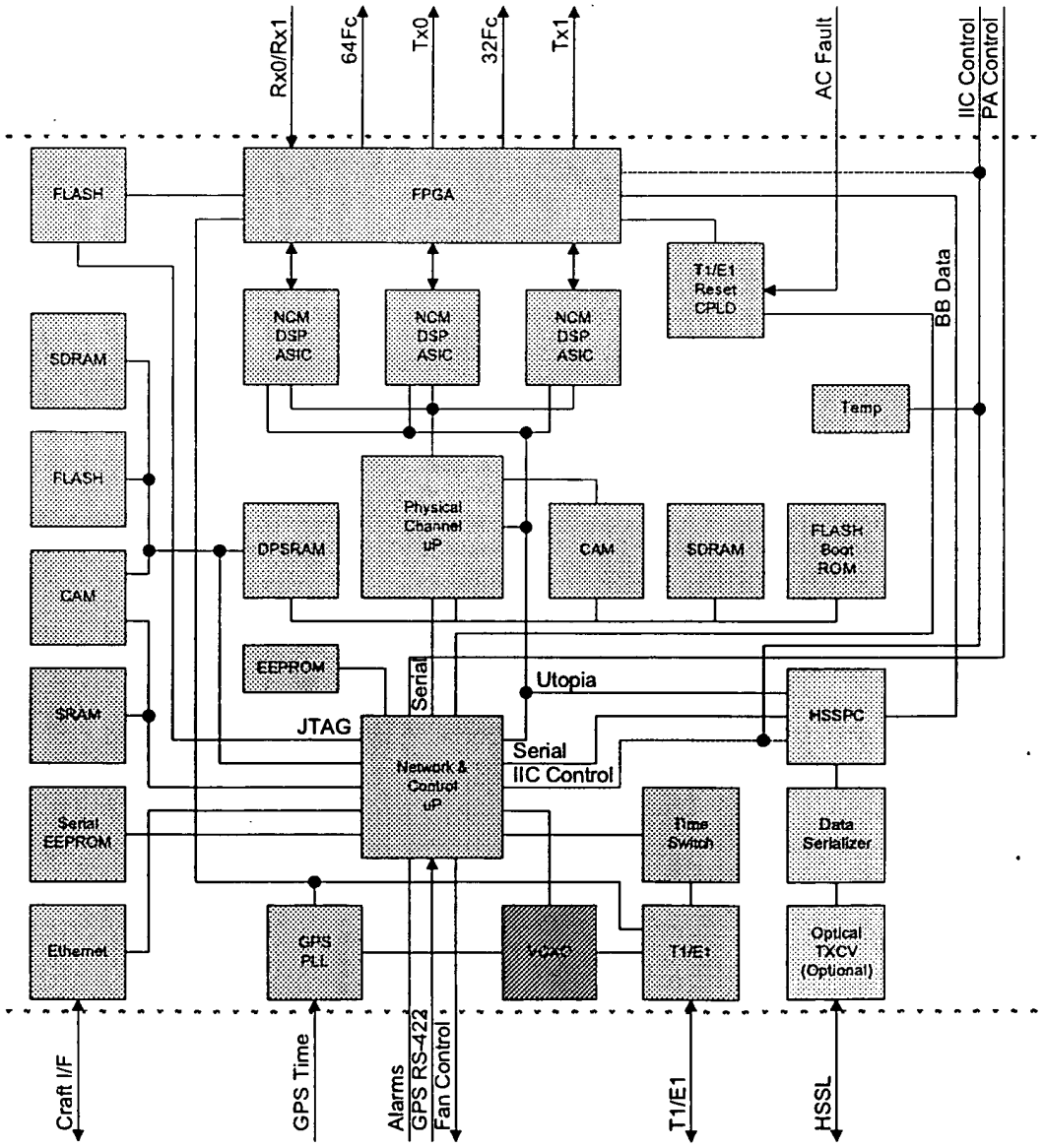

Rx0/Rx1
64Fc
Tx0
32Fc
Tx1
AC Fault
IIC Control
PA Control
FLASH
FPGA
T1/E1 Reset CPLD
BB Data
NCM DSP ASIC
NCM DSP ASIC
NCM DSP ASIC
SDRAM
Temp
FLASH
Physical Channel uP
DPSRAM
CAM
SDRAM
FLASH Boot ROM
CAM
EEPROM
Serial
Utopia
SRAM
JTAG
HSSPC
Network & Control uP
Serial
IIC Control
Serial EEPROM
Time Switch
Data Serializer
Ethernet
GPS PLL
T1/E1
Optical TXCV (Optional)
Craft I/F
GPS Time
Alarms
GPS RS-422
Fan Control
T1/E1
HSSL

FIG. 10

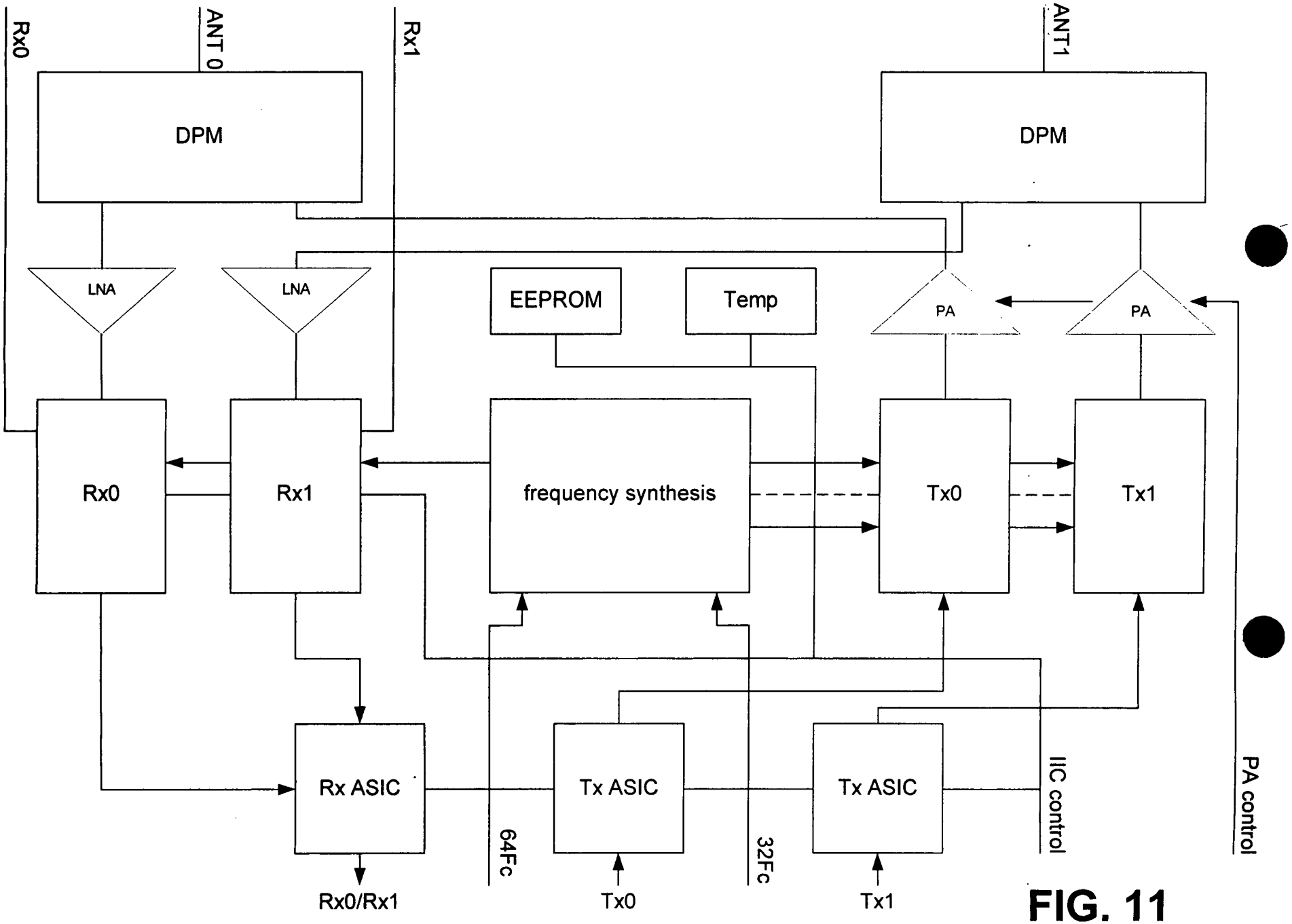

Rx0
ANT 0
Rx1
ANT1
DPM
DPM
LNA
LNA
EEPROM
Temp
PA
PA
Rx0
Rx1
frequency synthesis
Tx0
Tx1
Rx ASIC
Tx ASIC
Tx ASIC
IIC control
PA control
64Fc
32Fc
Rx0/Rx1
Tx0
Tx1

FIG. 11

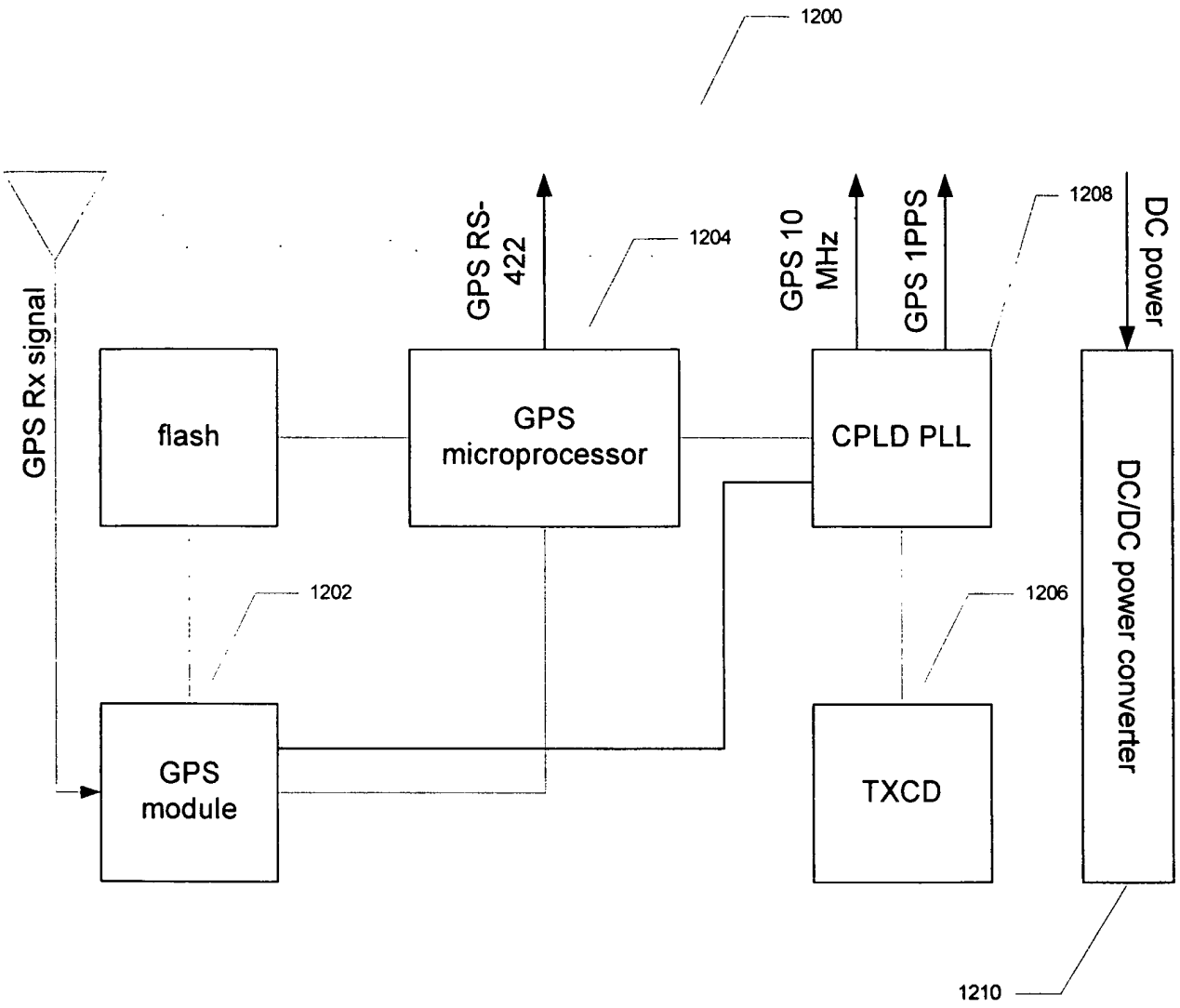

1200
GPS Rx signal
flash
GPS microprocessor
1204
GPS RS-422
GPS 10 MHz
GPS 1PPS
1208
DC power
CPLD PLL
DC/DC power converter
1202
1206
GPS module
TXCD
1210

FIG. 12

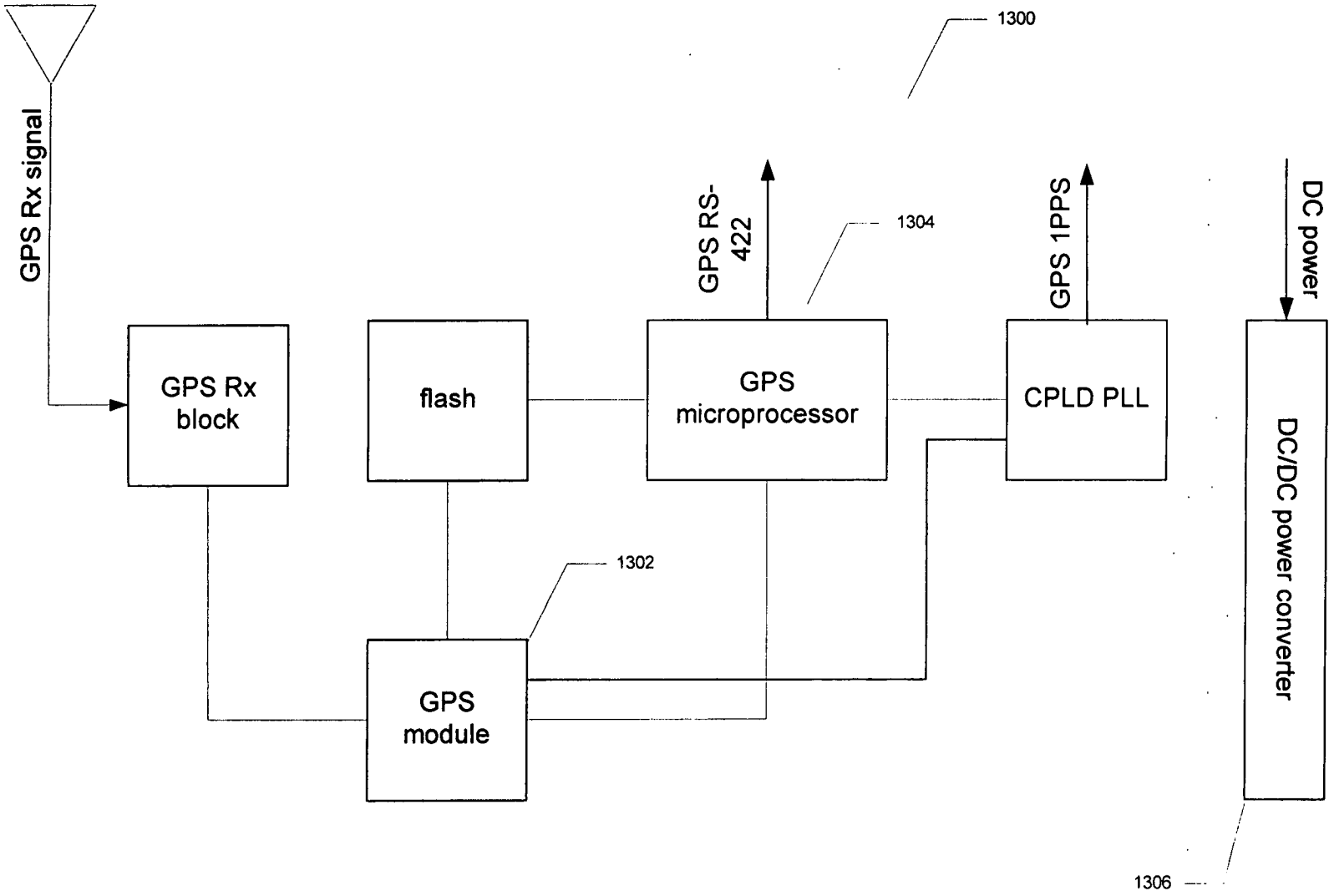

1300
GPS Rx signal
GPS RS-422
1304
GPS 1PPS
DC power
GPS Rx block
flash
GPS microprocessor
CPLD PLL
DC/DC power converter
1302
GPS module
1306

FIG. 13

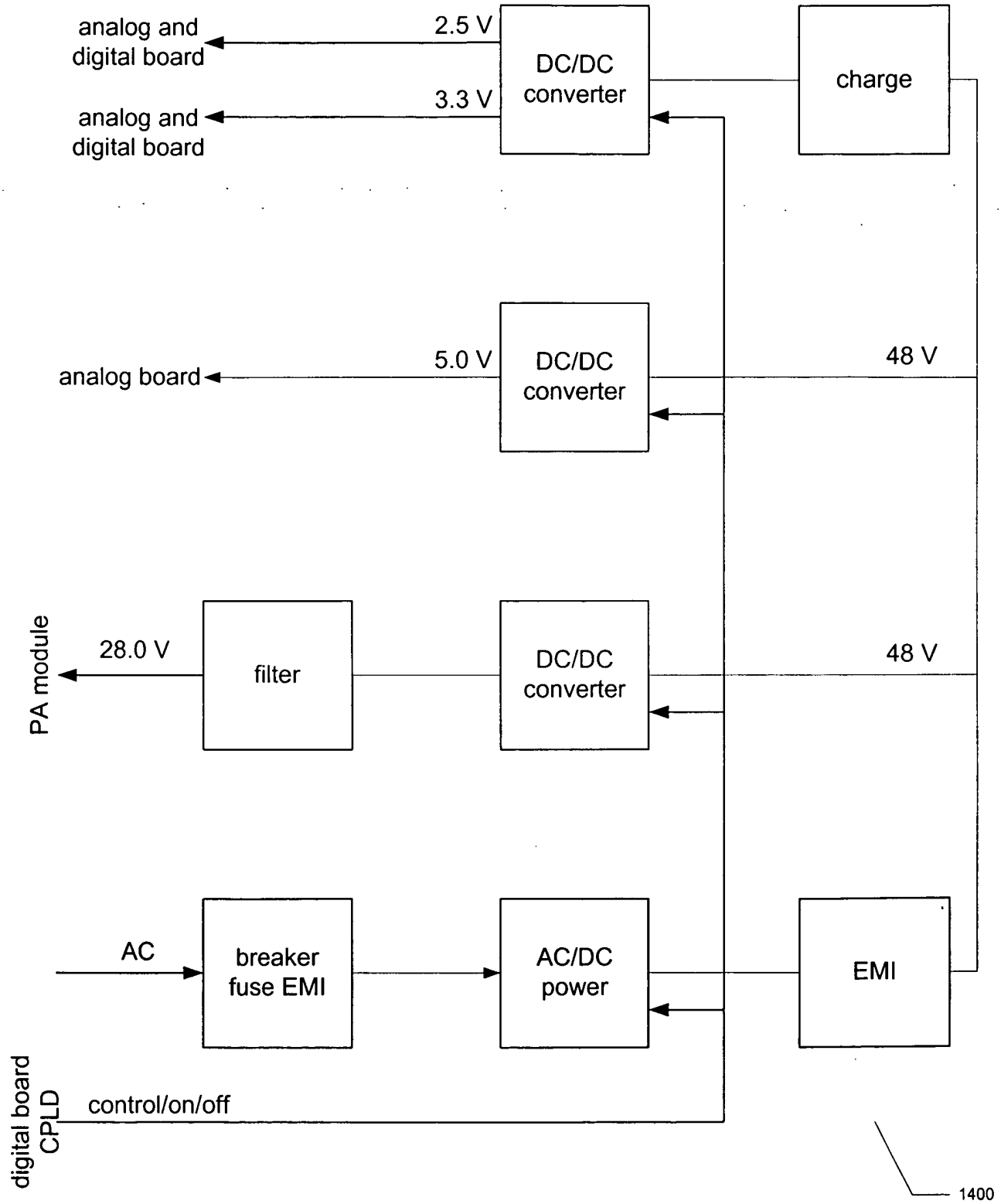

analog and digital board
2.5 V
3.3 V
analog and digital board
DC/DC converter
charge
analog board
5.0 V
DC/DC converter
48 V
PA module
28.0 V
filter
DC/DC converter
48 V
AC
breaker fuse EMI
AC/DC power
EMI
digital board CPLD
control/on/off
1400

FIG. 14

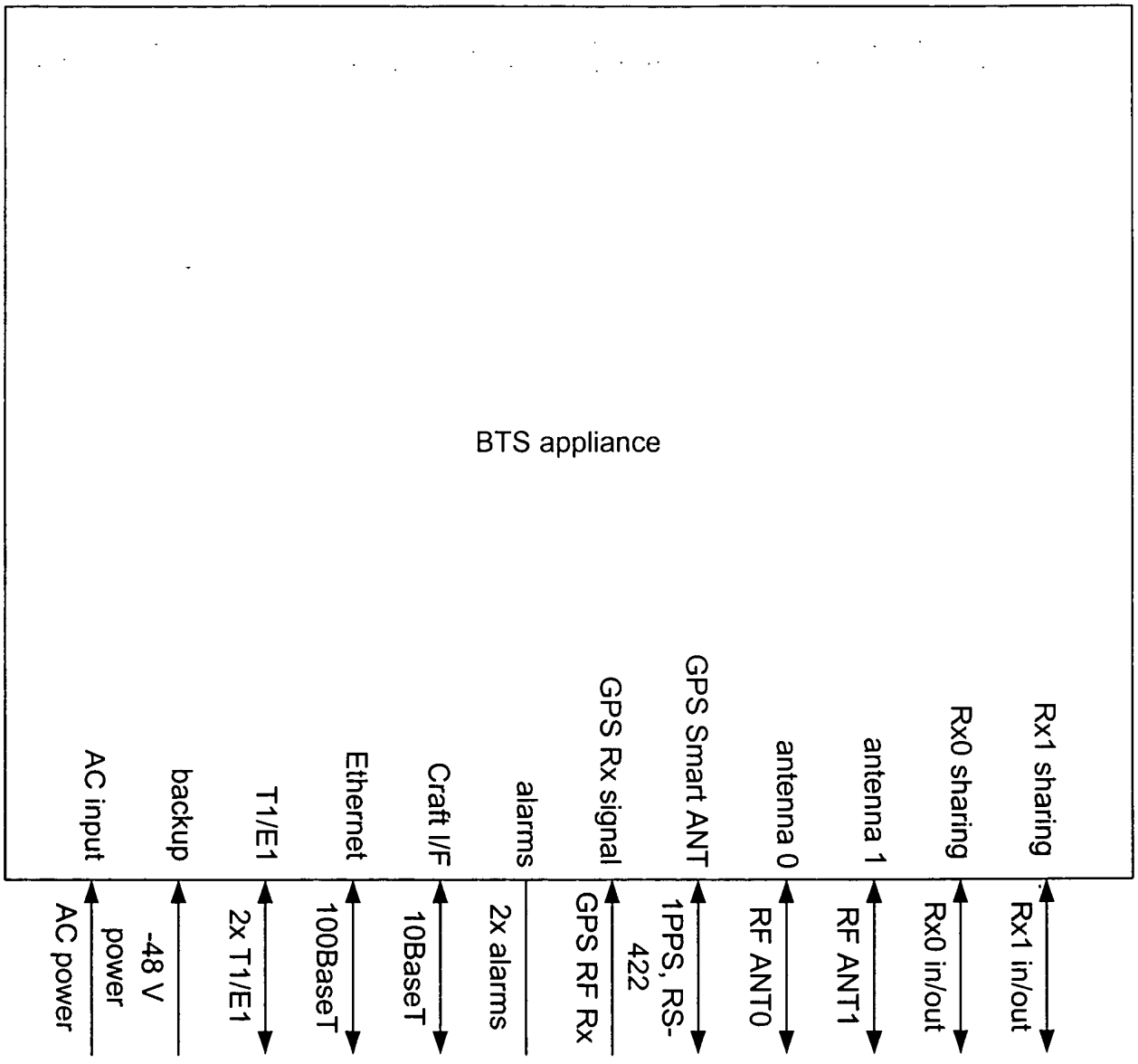

BTS appliance
Rx1 sharing
Rx0 sharing
antenna 1
antenna 0
GPS Smart ANT
GPS Rx signal
alarms
Craft I/F
Ethernet
T1/E1
backup
AC input
Rx1 in/out
Rx0 in/out
RF ANT1
RF ANT0
1PPS, RS-422
GPS RF Rx
2x alarms
10BaseT
100BaseT
2x T1/E1
-48 V power
AC power

FIG. 15

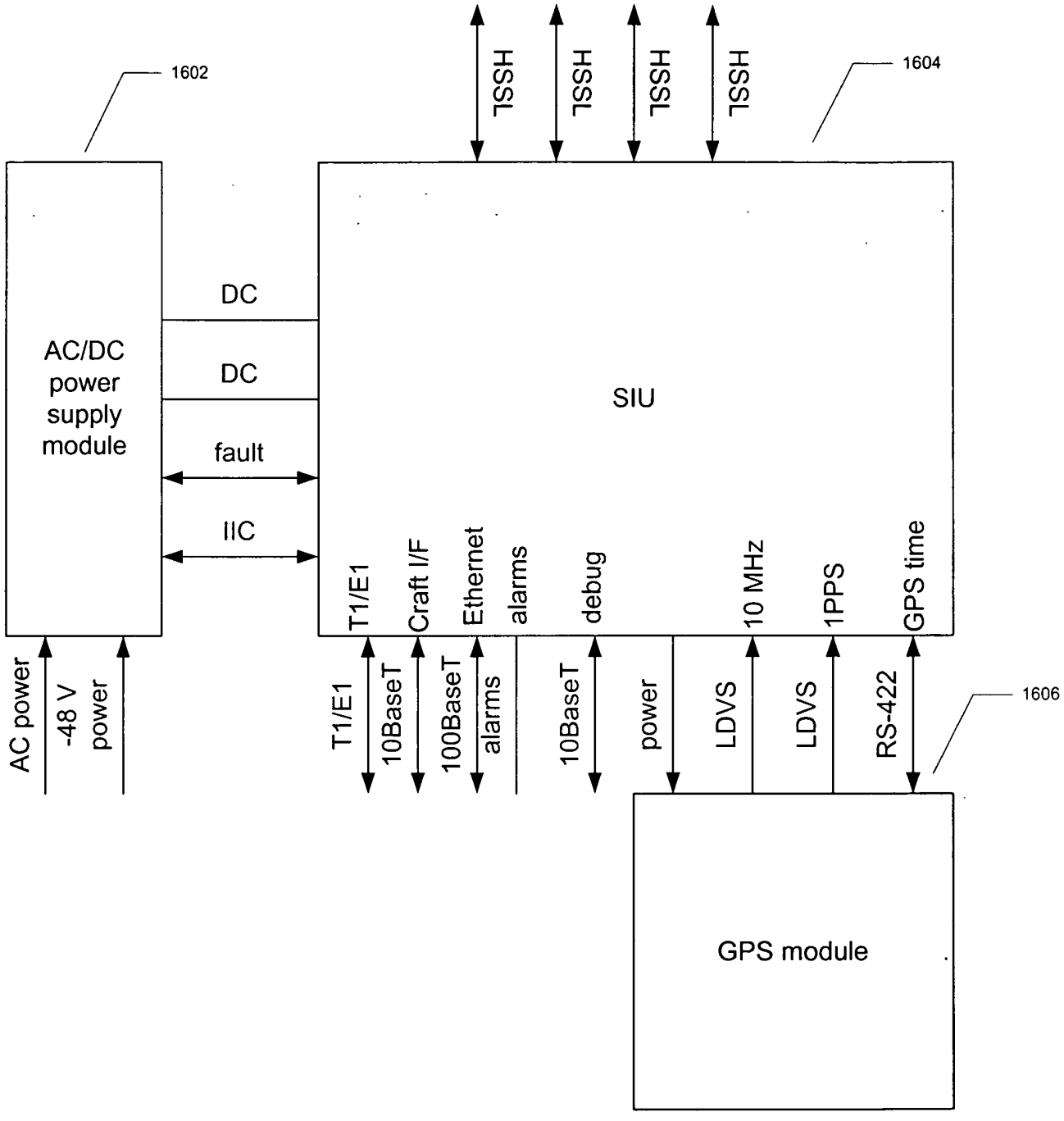

1602
1604
1606
HSSL
HSSL
HSSL
HSSL
AC/DC power supply module
DC
DC
fault
IIC
SIU
T1/E1
Craft I/F
Ethernet
alarms
debug
10 MHz
1PPS
GPS time
AC power
-48 V power
T1/E1
10BaseT
100BaseT
alarms
10BaseT
power
LDVS
LDVS
RS-422
GPS module

FIG. 16

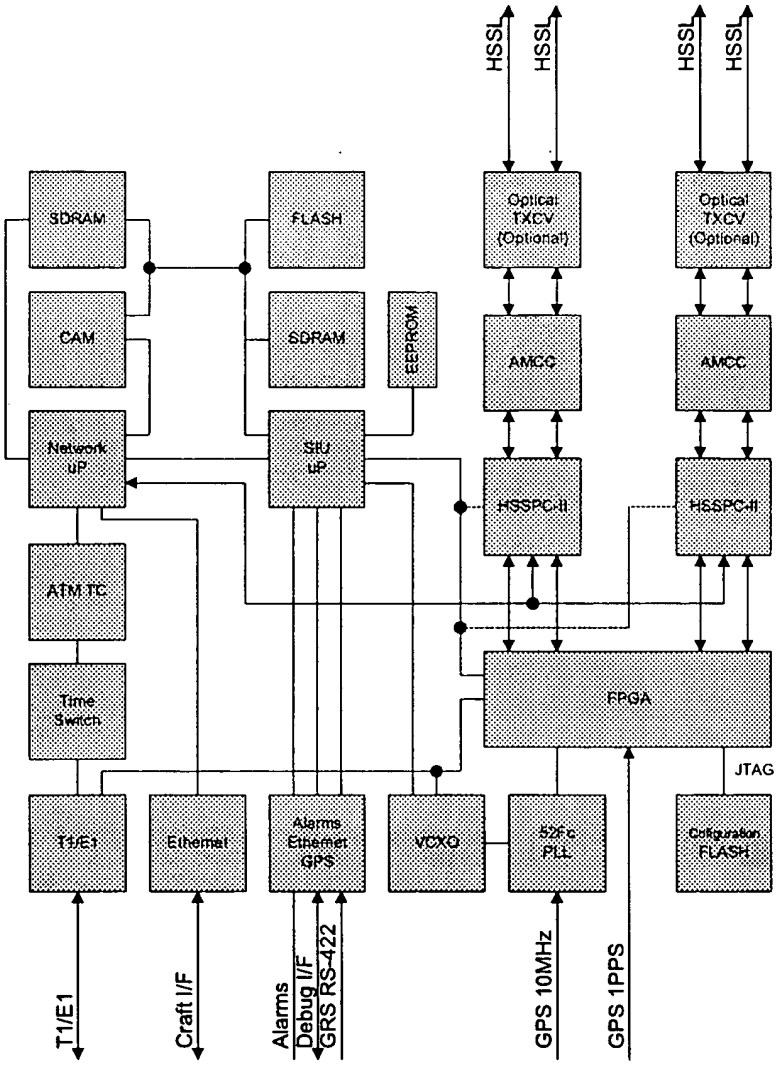

HSSL
HSSL
HSSL
HSSL
SDRAM
FLASH
Optical TXCV (Optional)
Optical TXCV (Optional)
CAM
SDRAM
EEPROM
AMCC
AMCC
Network uP
StU uP
HSSPC-II
HSSPC-II
ATM TC
Time Switch
FPGA
JTAG
T1/E1
Ethernet
Alarms Ethernet GPS
VCXO
52Fc PLL
Configuration FLASH
T1/E1
Craft I/F
Alarms
Debug I/F
GRS RS-422
GPS 10MHz
GPS 1PPS

FIG. 17

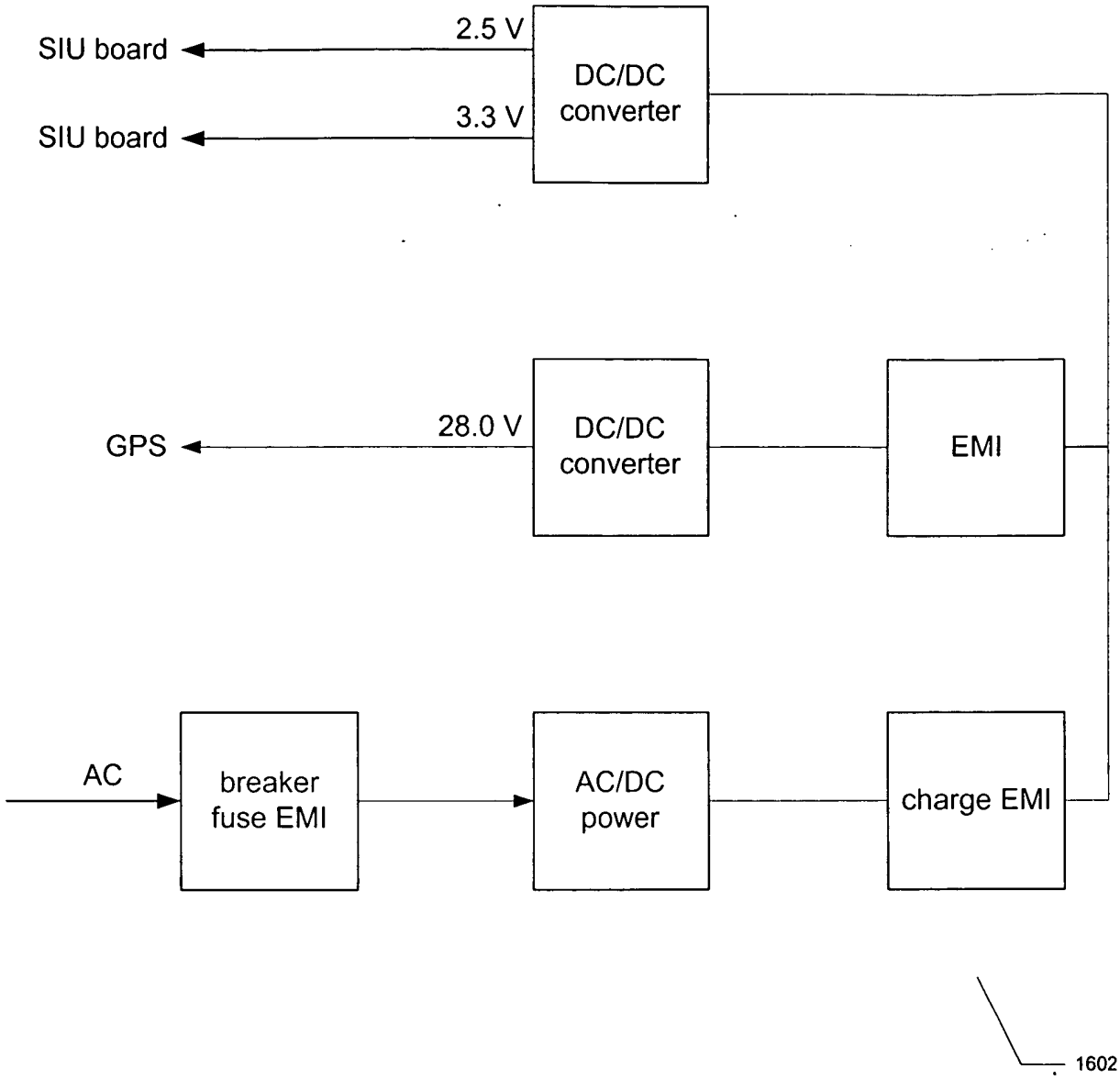

SIU board
2.5 V
SIU board
3.3 V
DC/DC converter
GPS
28.0 V
DC/DC converter
EMI
AC
breaker fuse EMI
AC/DC power
charge EMI
1602

FIG. 18

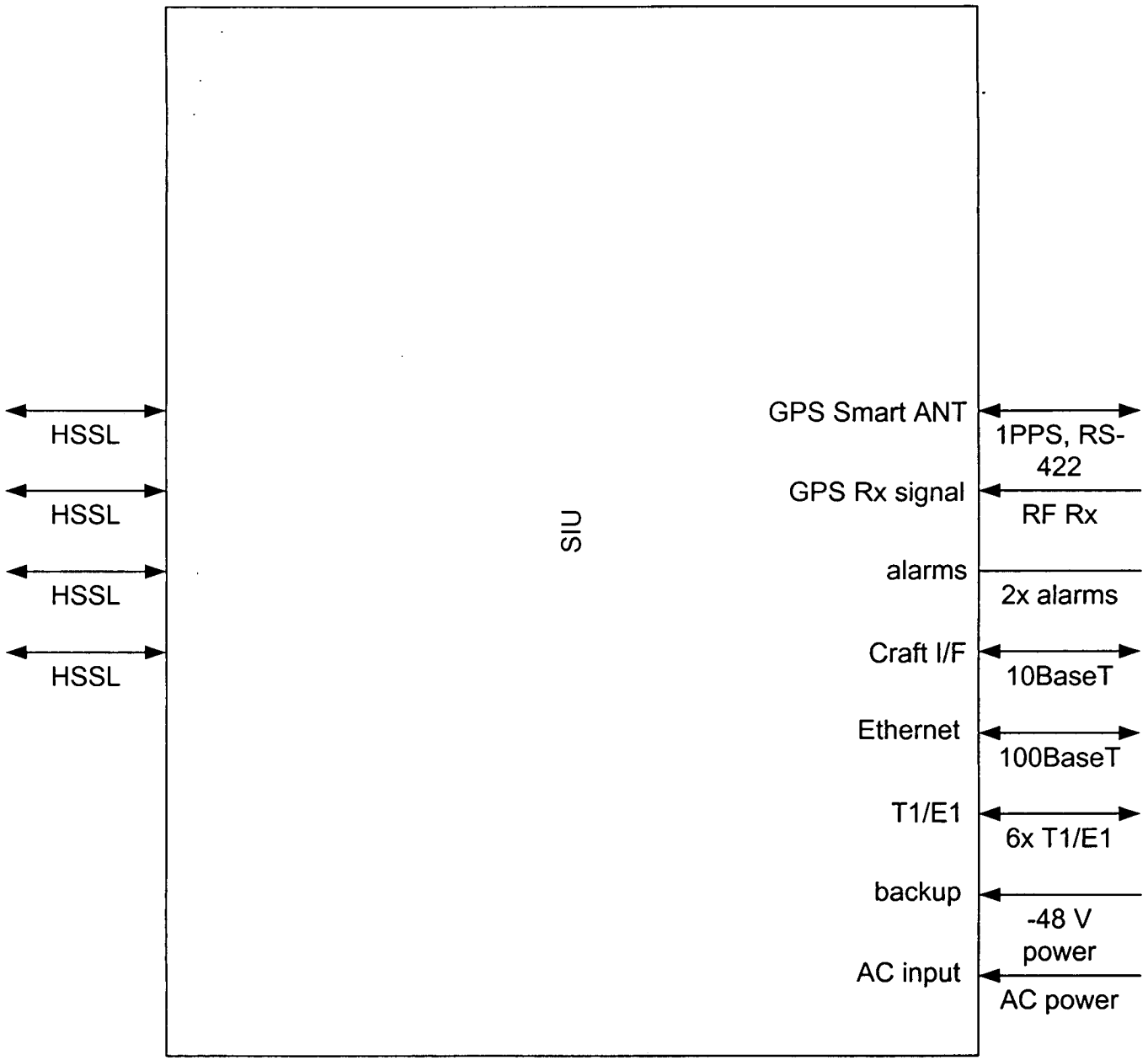

HSSL
HSSL
HSSL
HSSL
SIU
GPS Smart ANT
1PPS, RS-422
GPS Rx signal
RF Rx
alarms
2x alarms
Craft I/F
10BaseT
Ethernet
100BaseT
T1/E1
6x T1/E1
backup
-48 V power
AC input
AC power

FIG. 19

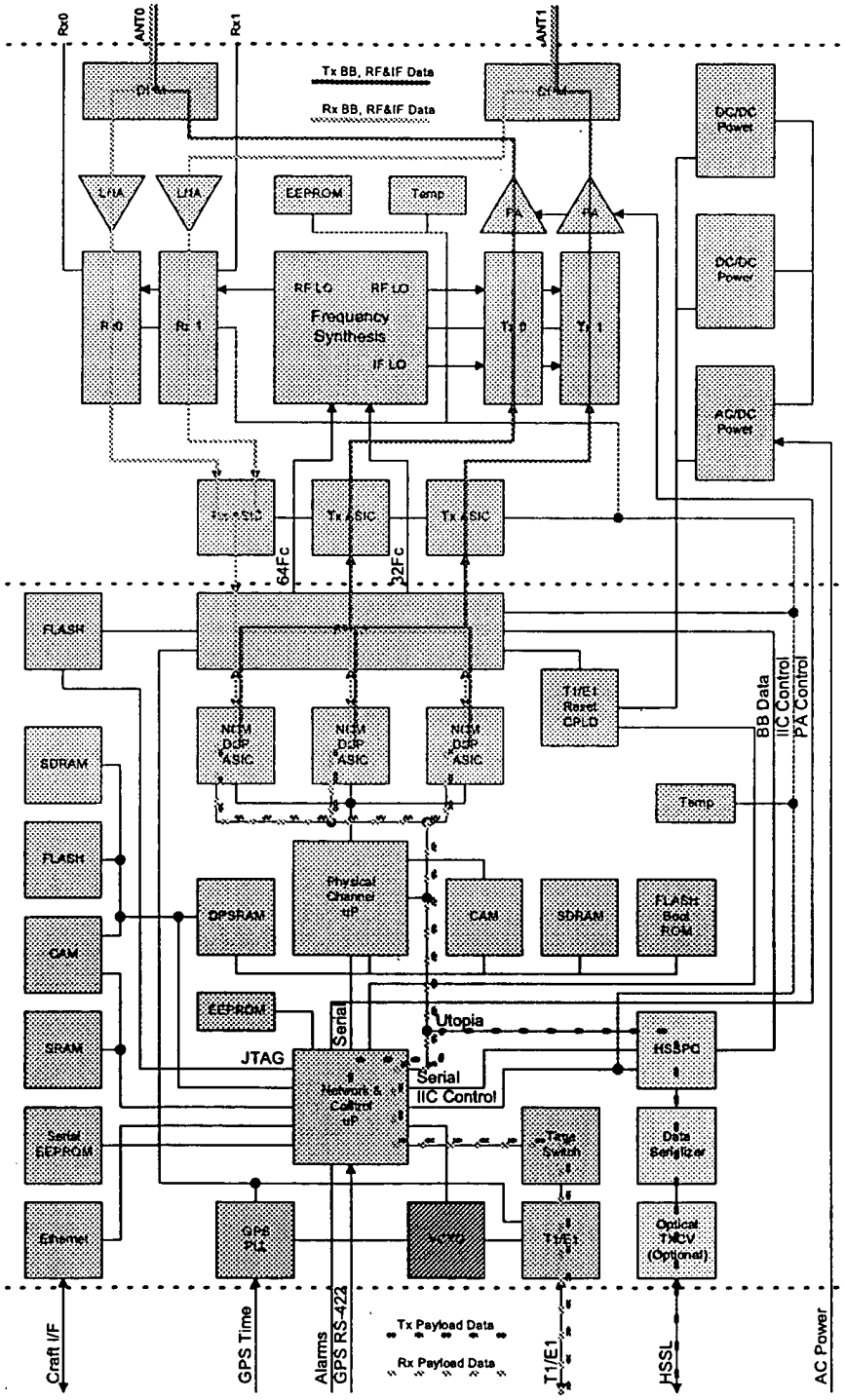

Rx0
ANT0
Rx1
ANT1
Tx BB, RF&IF Data
Rx BB, RF&IF Data
DC/DC Power
DC/DC Power
AC/DC Power
LNA
LNA
EEPROM
Temp
PA
PA
Rx 0
Rx 1
RF LO
RF LO
Frequency Synthesis
IF LO
Tx 0
Tx 1
Tx ASIC
Tx ASIC
64Fc
32Fc
FLASH
SDRAM
FLASH
CAM
SRAM
Serial EEPROM
Ethernet
NCM DCP ASIC
NCM DCP ASIC
NCM DCP ASIC
T1/E1 Reset CPLD
Temp
BB Data
IIC Control
PA Control
DPSRAM
Physical Channel uP
CAM
SDRAM
FLASH Boot ROM
EEPROM
Serial
Utopia
JTAG
Network & Control uP
Serial IIC Control
HSSPC
Time Switch
Data Serializer
GPS PLL
T1/E1
Optical TXCV (Optional)
Craft I/F
GPS Time
Alarms
GPS RS-422
Tx Payload Data
Rx Payload Data
T1/E1
HSSL
AC Power

FIG. 20

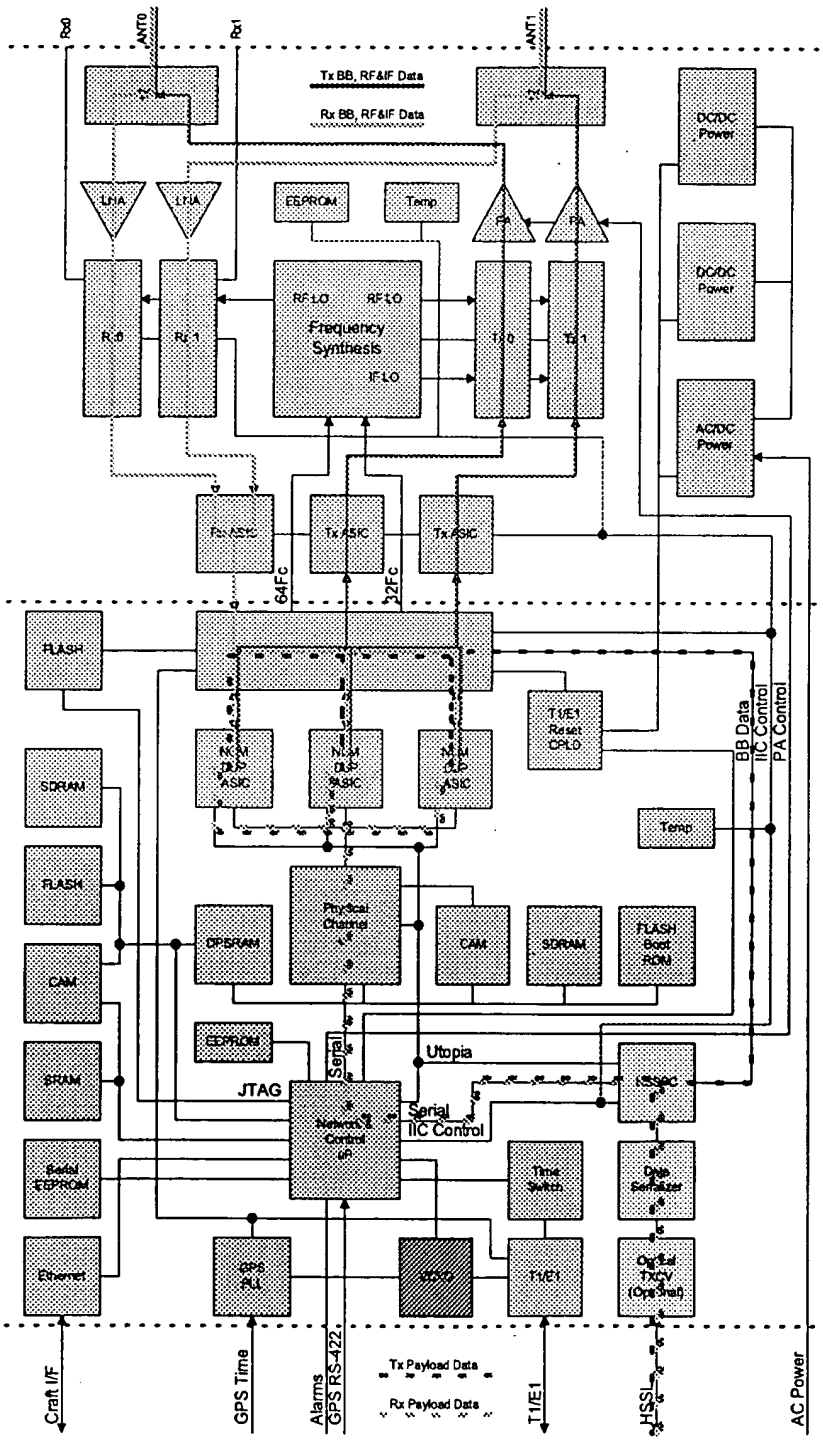

Rx0
ANT0
Rx1
ANT1
Tx BB, RF&IF Data
Rx BB, RF&IF Data
DC/DC Power
DC/DC Power
AC/DC Power
LNA
LNA
EEPROM
Temp
PA
PA
Rx 0
Rx 1
RF LO
RF LO
Frequency Synthesis
IF LO
Tx 0
Tx 1
Rx ASIC
Tx ASIC
Tx ASIC
64Fc
32Fc
FLASH
T1/E1 Reset CPLD
BB Data
IIC Control
PA Control
SDRAM
NAM DLP ASIC
NAM DLP ASIC
NAM DLP ASIC
Temp
FLASH
Physical Channel
DPSRAM
CAM
SDRAM
FLASH Boot ROM
CAM
EEPROM
Serial
Utopia
SRAM
JTAG
Network Control
Serial IIC Control
HSSIC
Serial EEPROM
Time Switch
Data Serializer
Ethernet
GPS PLL
VCXO
T1/E1
Optical TX/RX (Optional)
Craft I/F
GPS Time
Alarms
GPS RS-422
Tx Payload Data
Rx Payload Data
T1/E1
HSSI
AC Power

FIG. 21

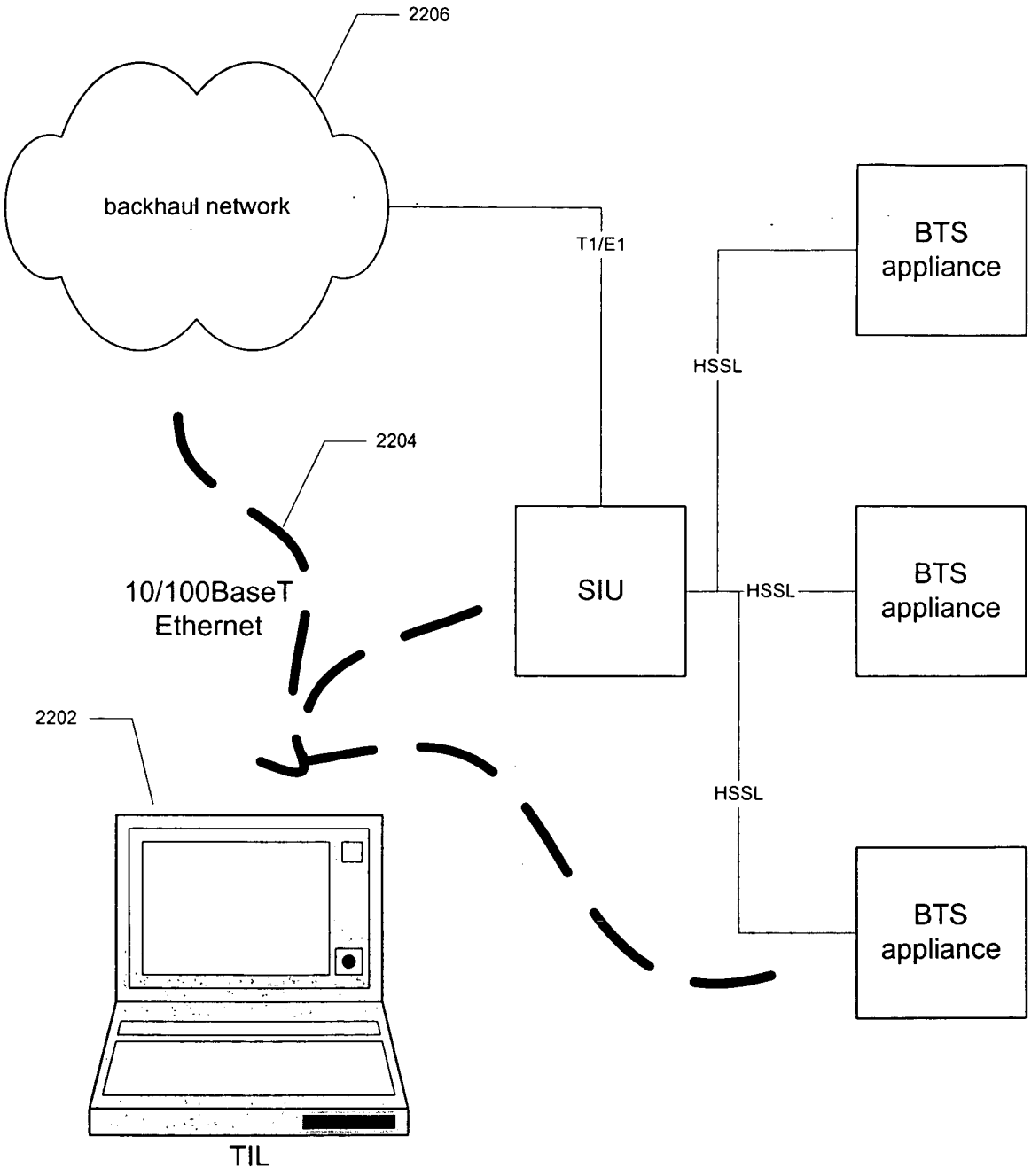

2206
backhaul network
T1/E1
BTS appliance
HSSL
2204
10/100BaseT Ethernet
SIU
HSSL
BTS appliance
2202
HSSL
BTS appliance
TIL

FIG. 22

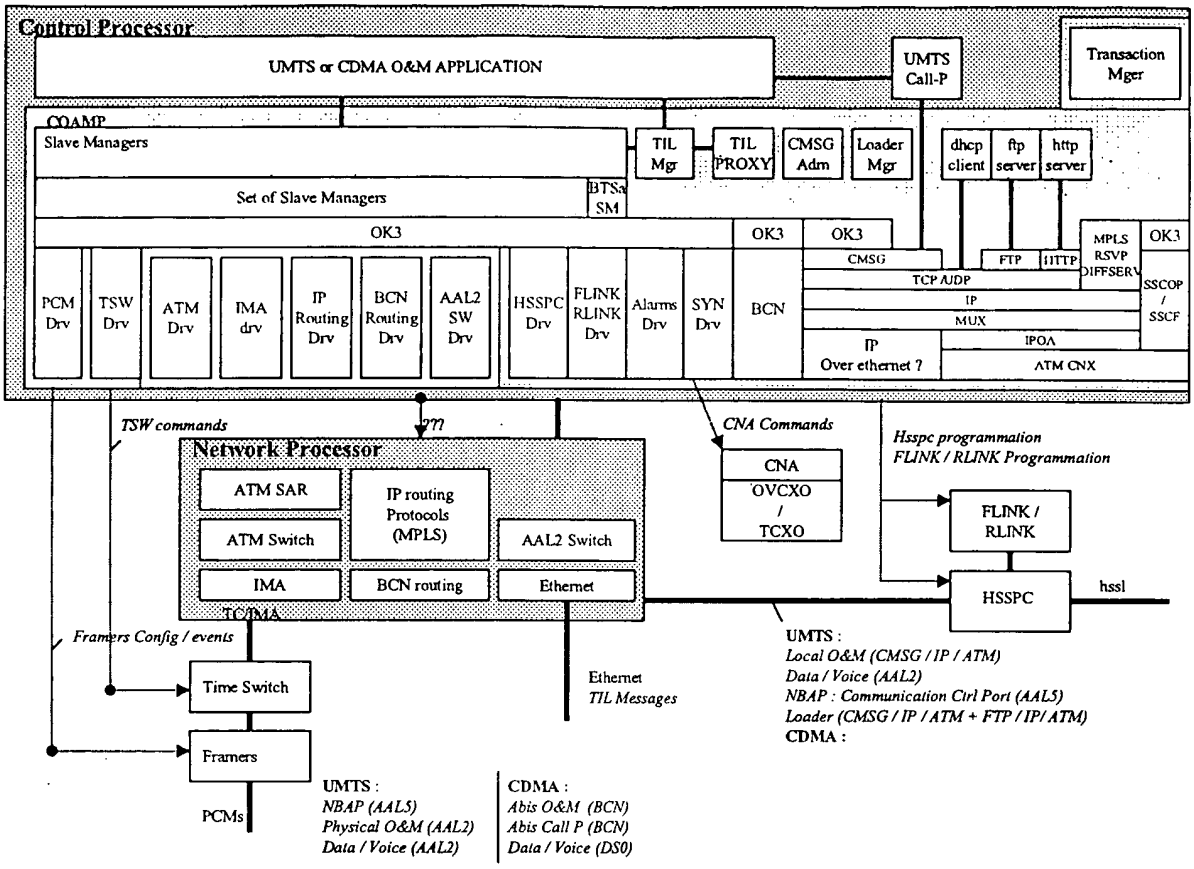

Control Processor
UMTS or CDMA O&M APPLICATION
UMTS Call-P
Transaction Mger
COAMP
Slave Managers
TIL Mgr
TIL PROXY
CMSG Adm
Loader Mgr
dhcp client
ftp server
http server
Set of Slave Managers
BTSa SM
OK3
OK3
OK3
CMSG
FTP
HTTP
MPLS RSVP DIFFSERV
OK3
PCM Drv
TSW Drv
ATM Drv
IMA drv
IP Routing Drv
BCN Routing Drv
AAL2 SW Drv
HSSPC Drv
FLINK RLINK Drv
Alarms Drv
SYN Drv
BCN
TCP/UDP
IP
MUX
SSCOP / SSCF
IP Over ethernet ?
IPOA
ATM CNX
TSW commands
CNA Commands
Hsspc programmation
FLINK / RLINK Programmation
Network Processor
ATM SAR
IP routing Protocols (MPLS)
ATM Switch
AAL2 Switch
IMA
BCN routing
Ethernet
CNA
OVCXO / TCXO
FLINK / RLINK
HSSPC
hssl
TC/MA
Framers Config / events
Time Switch
Framers
PCMs
Ethernet
TIL Messages
UMTS :
Local O&M (CMSG / IP / ATM)
Data / Voice (AAL2)
NBAP : Communication Ctrl Port (AAL5)
Loader (CMSG / IP / ATM + FTP / IP/ ATM)
CDMA :
UMTS :
NBAP (AAL5)
Physical O&M (AAL2)
Data / Voice (AAL2)
CDMA :
Abis O&M (BCN)
Abis Call P (BCN)
Data / Voice (DS0)

FIG. 23

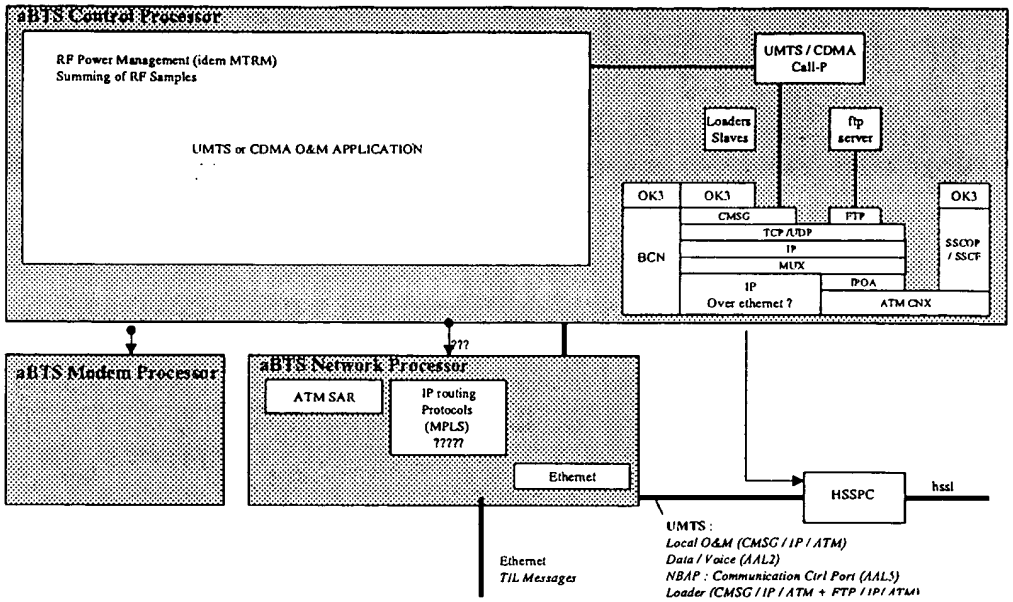

aBTS Control Processor
RF Power Management (idem MTRM)
Summing of RF Samples
UMTS or CDMA O&M APPLICATION
UMTS / CDMA Call-P
Loaders Slaves
ftp server
OK3
OK3
OK3
CMSG
FTP
TCP /UDP
IP
MUX
BCN
IP Over ethernet ?
IPOA
ATM CNX
SSCOP / SSCF
aBTS Modem Processor
???
aBTS Network Processor
ATM SAR
IP routing Protocols (MPLS) ?????
Ethernet
HSSPC
hssl
UMTS :
Local O&M (CMSG / IP / ATM)
Data / Voice (AAL2)
NBAP : Communication Ctrl Port (AAL5)
Loader (CMSG / IP / ATM + FTP / IP / ATM)
Ethernet
TIL Messages

FIG. 24

2500

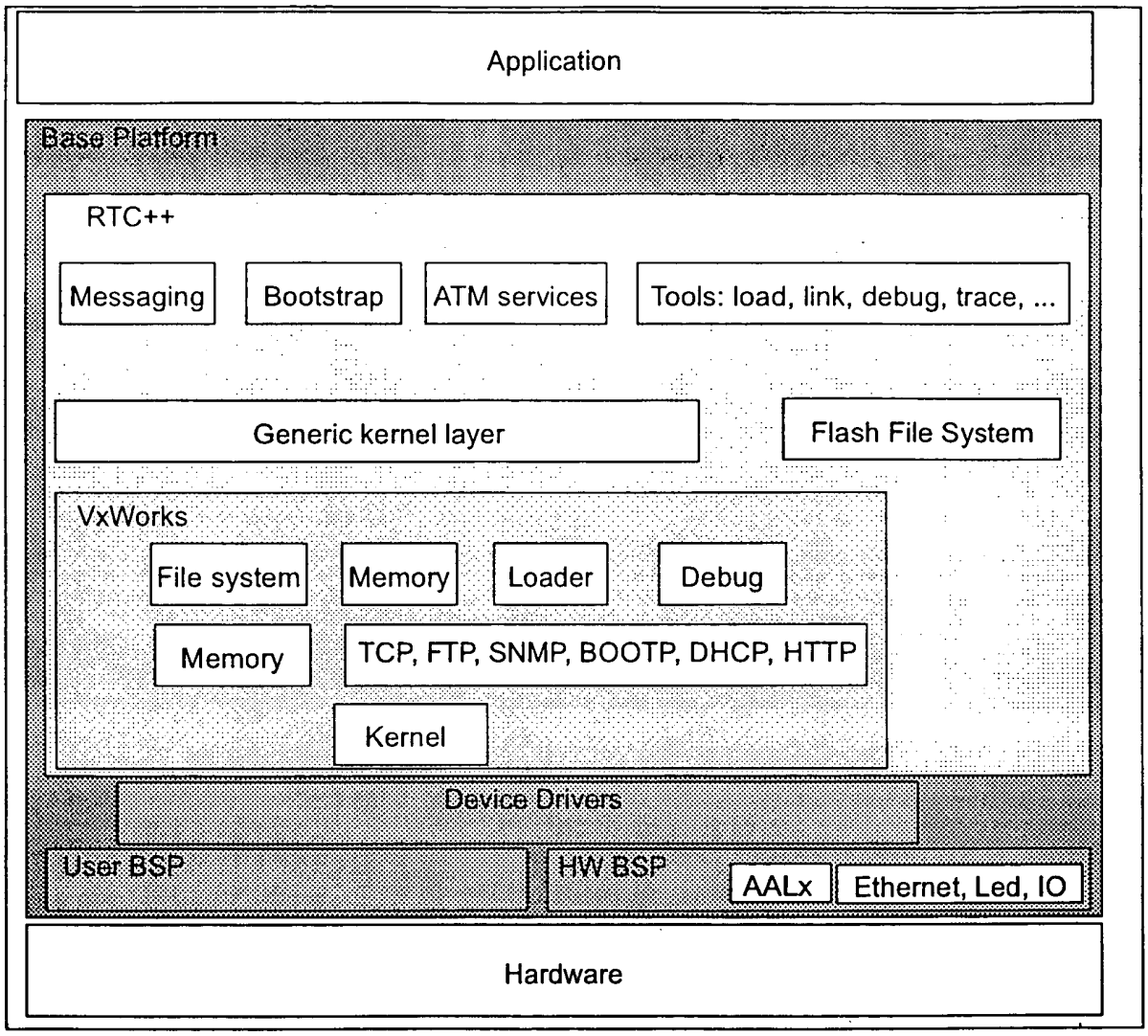

Application
Base Platform
RTC++
Messaging
Bootstrap
ATM services
Tools: load, link, debug, trace, ...
Generic kernel layer
Flash File System
VxWorks
File system
Memory
Loader
Debug
Memory
TCP, FTP, SNMP, BOOTP, DHCP, HTTP
Kernel
Device Drivers
User BSP
HW BSP
AALx
Ethernet, Led, IO
Hardware

FIG. 25

2600

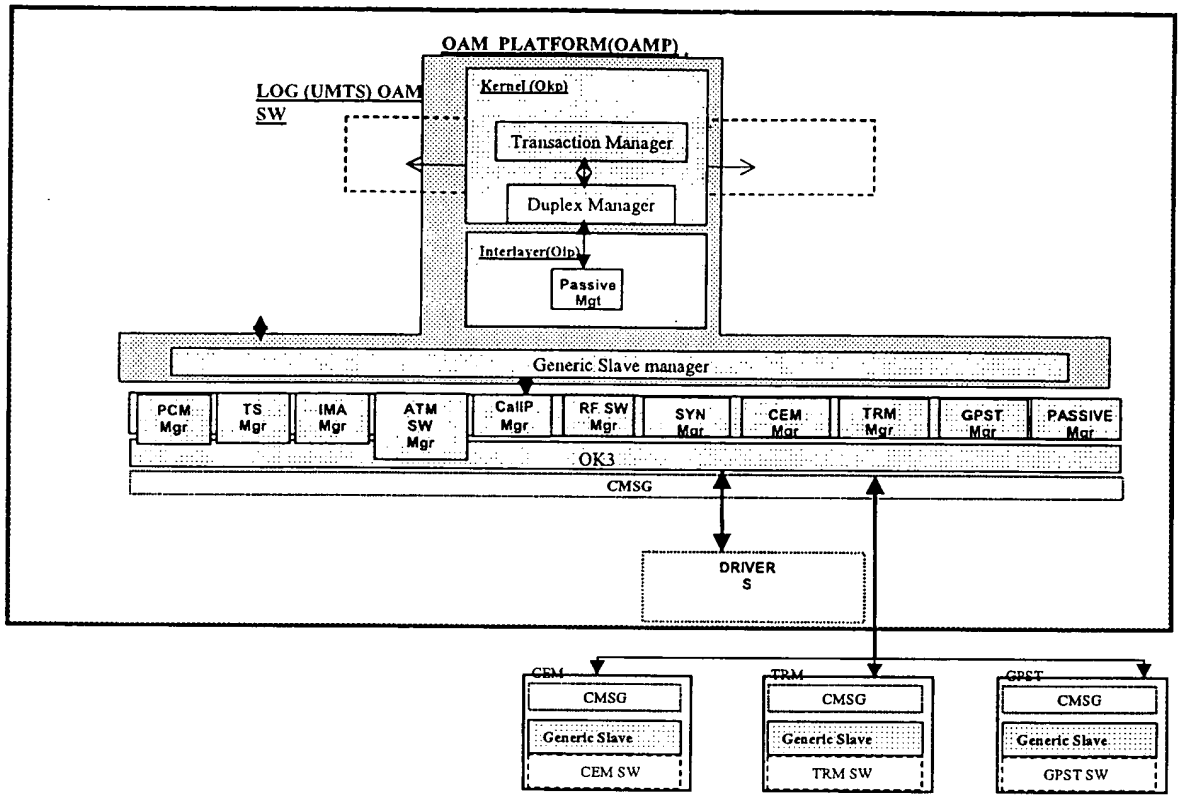

OAM PLATFORM(OAMP)
LOG (UMTS) OAM SW
Kernel(Oke)
Transaction Manager
Duplex Manager
Interlayer(Oip)
Passive Mgt
Generic Slave manager
PCM Mgr
TS Mgr
IMA Mgr
ATM SW Mgr
CallP Mgr
RF SW Mgr
SYN Mgr
CEM Mgr
TRM Mgr
GPST Mgr
PASSIVE Mgr
OK3
CMSG
DRIVER S
CEM
CMSG
Generic Slave
CEM SW
TRM
CMSG
Generic Slave
TRM SW
GPST
CMSG
Generic Slave
GPST SW

FIG. 26

(2700

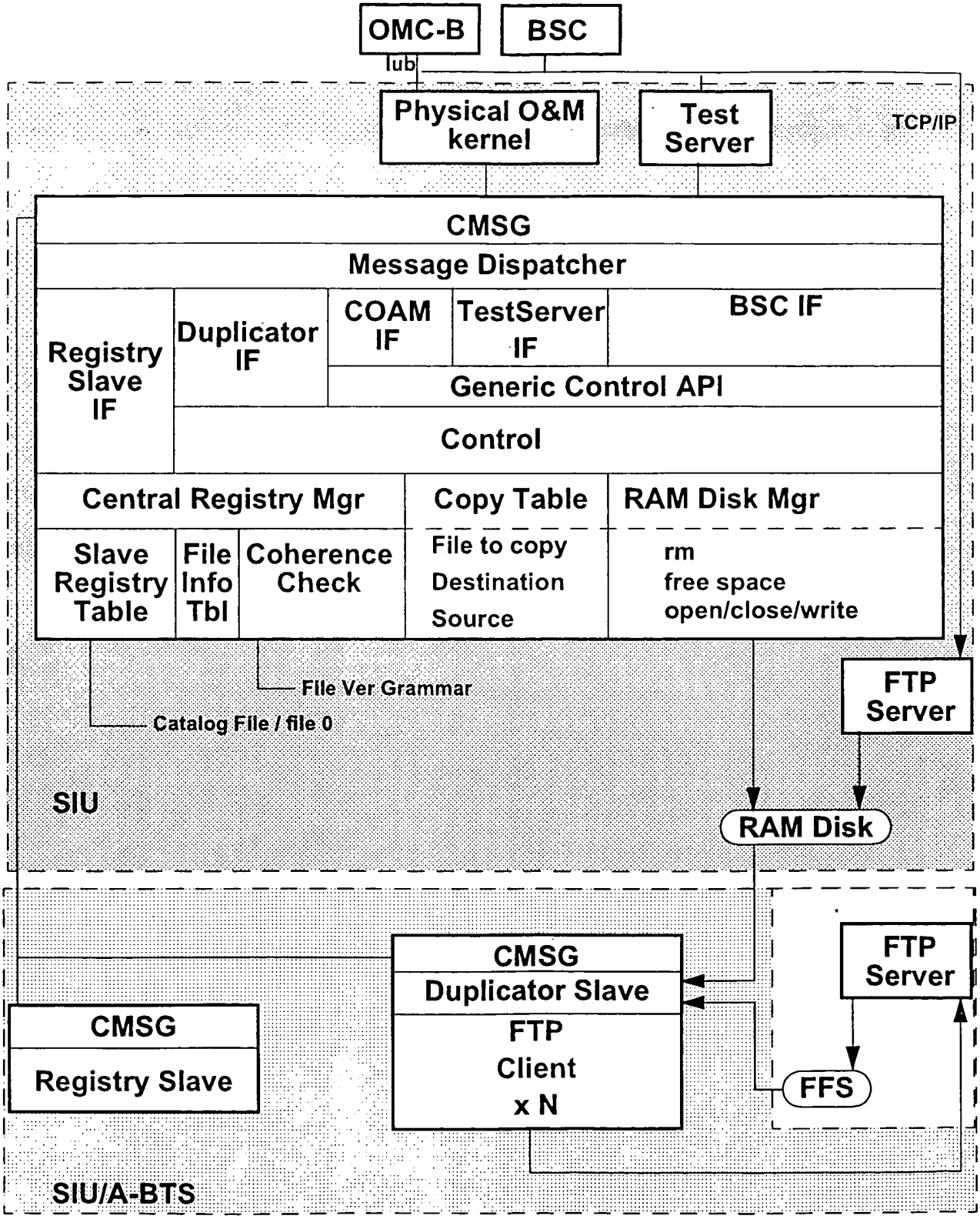

OMC-B
BSC
Iub
Physical O&M kernel
Test Server
TCP/IP
CMSG
Message Dispatcher
Registry Slave IF
Duplicator IF
COAM IF
TestServer IF
BSC IF
Generic Control API
Control
Central Registry Mgr
Copy Table
RAM Disk Mgr
Slave Registry Table
File Info Tbl
Coherence Check
File to copy
Destination
Source
rm
free space
open/close/write
File Ver Grammar
Catalog File / file 0
FTP Server
SIU
RAM Disk
CMSG
Duplicator Slave
FTP Client x N
FTP Server
CMSG
Registry Slave
FFS
SIU/A-BTS

FIG. 27

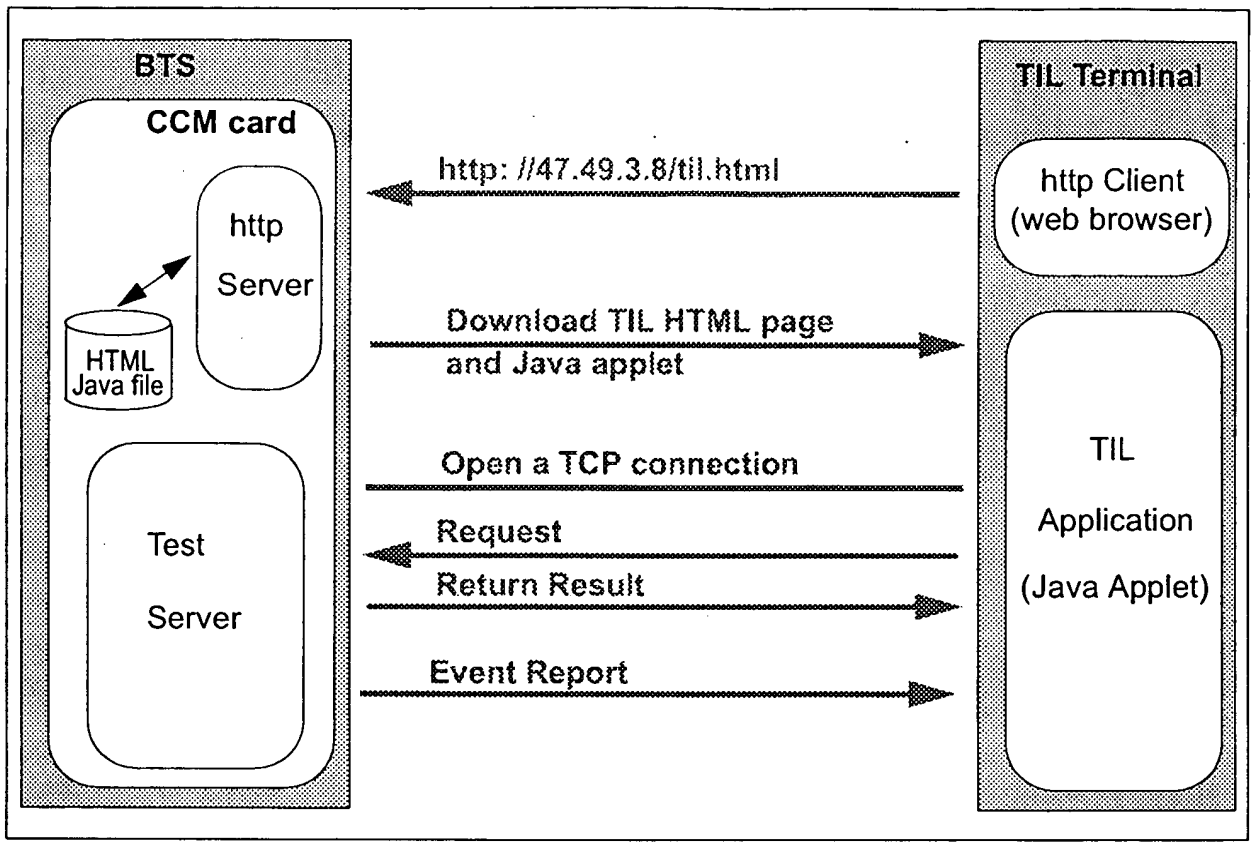

2500
BTS
CCM card
http
Server
HTML
Java file
Test
Server
http: //47.49.3.8/til.html
Download TIL HTML page
and Java applet
Open a TCP connection
Request
Return Result
Event Report
TIL Terminal
http Client
(web browser)
TIL
Application
(Java Applet)

FIG. 28

pa

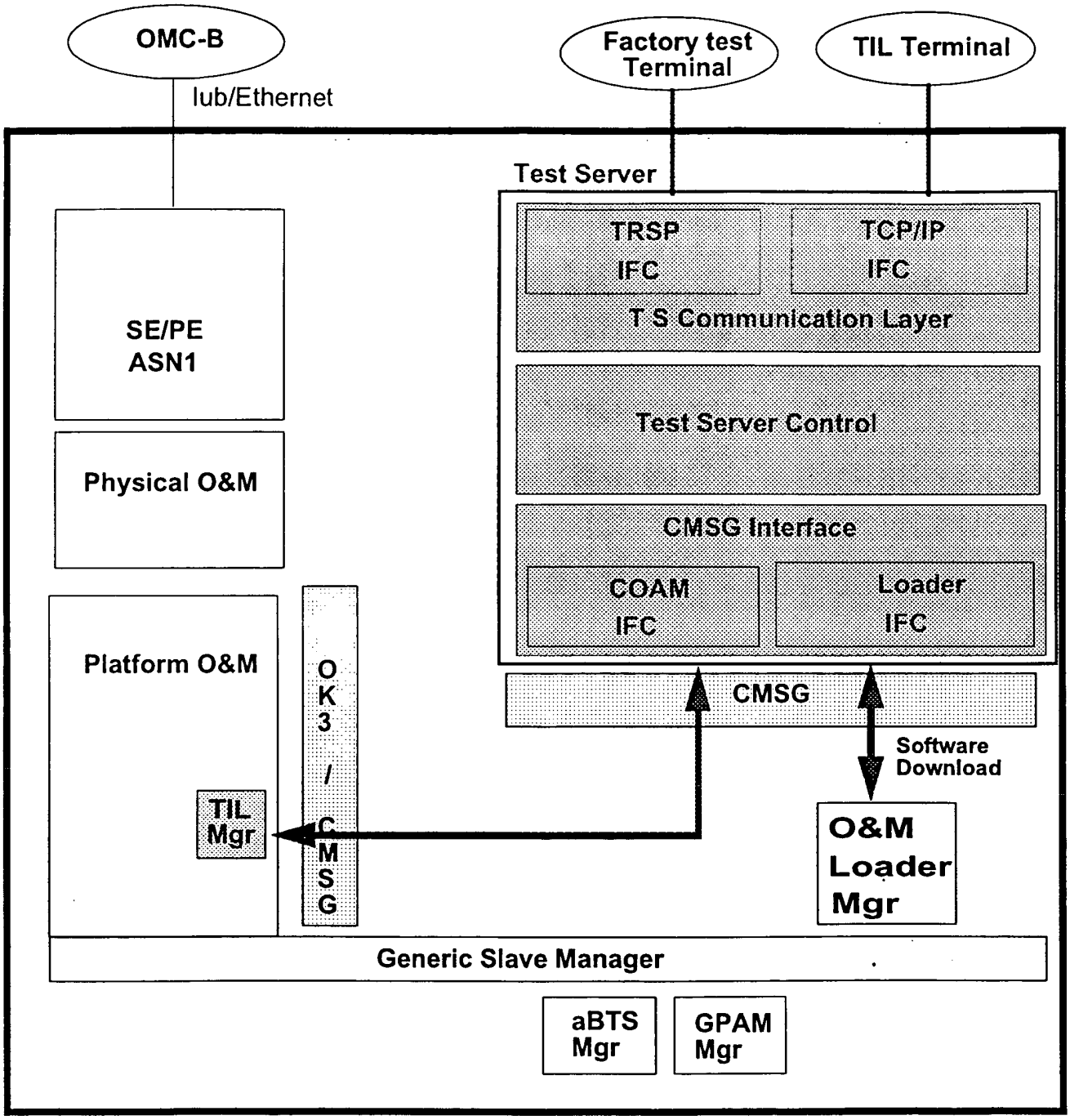

OMC-B
Iub/Ethernet
Factory test Terminal
TIL Terminal
Test Server
TRSP IFC
TCP/IP IFC
T S Communication Layer
Test Server Control
CMSG Interface
COAM IFC
Loader IFC
SE/PE ASN1
Physical O&M
Platform O&M
TIL Mgr
OK3/CMSG
CMSG
Software Download
O&M Loader Mgr
Generic Slave Manager
aBTS Mgr
GPAM Mgr
Test Server layers

FIG. 29

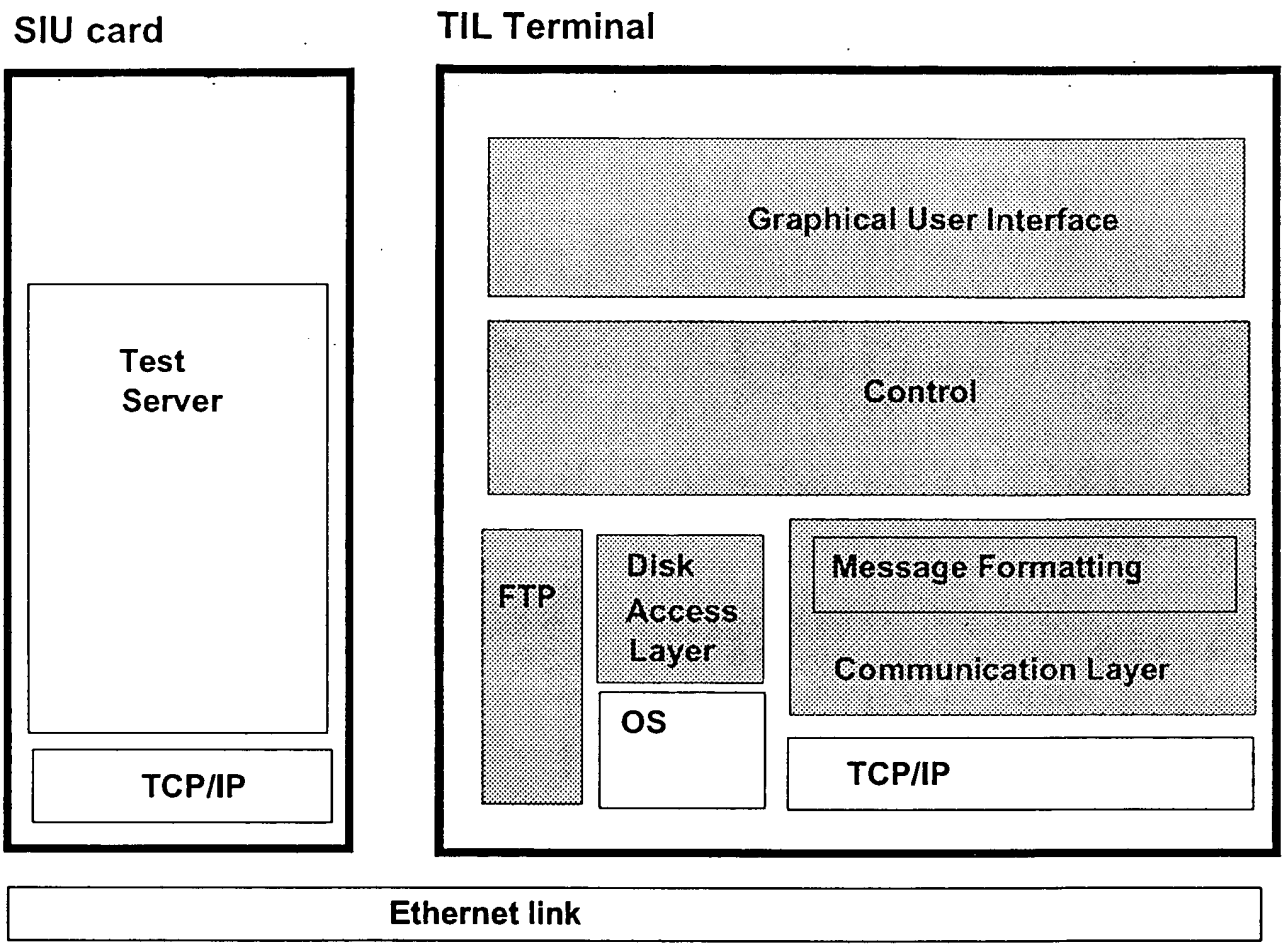

SIU card
TIL Terminal
Test Server
TCP/IP
Graphical User Interface
Control
FTP
Disk Access Layer
OS
Message Formatting
Communication Layer
TCP/IP
Ethernet link
TIL Application Layers

FIG. 30

5 3100

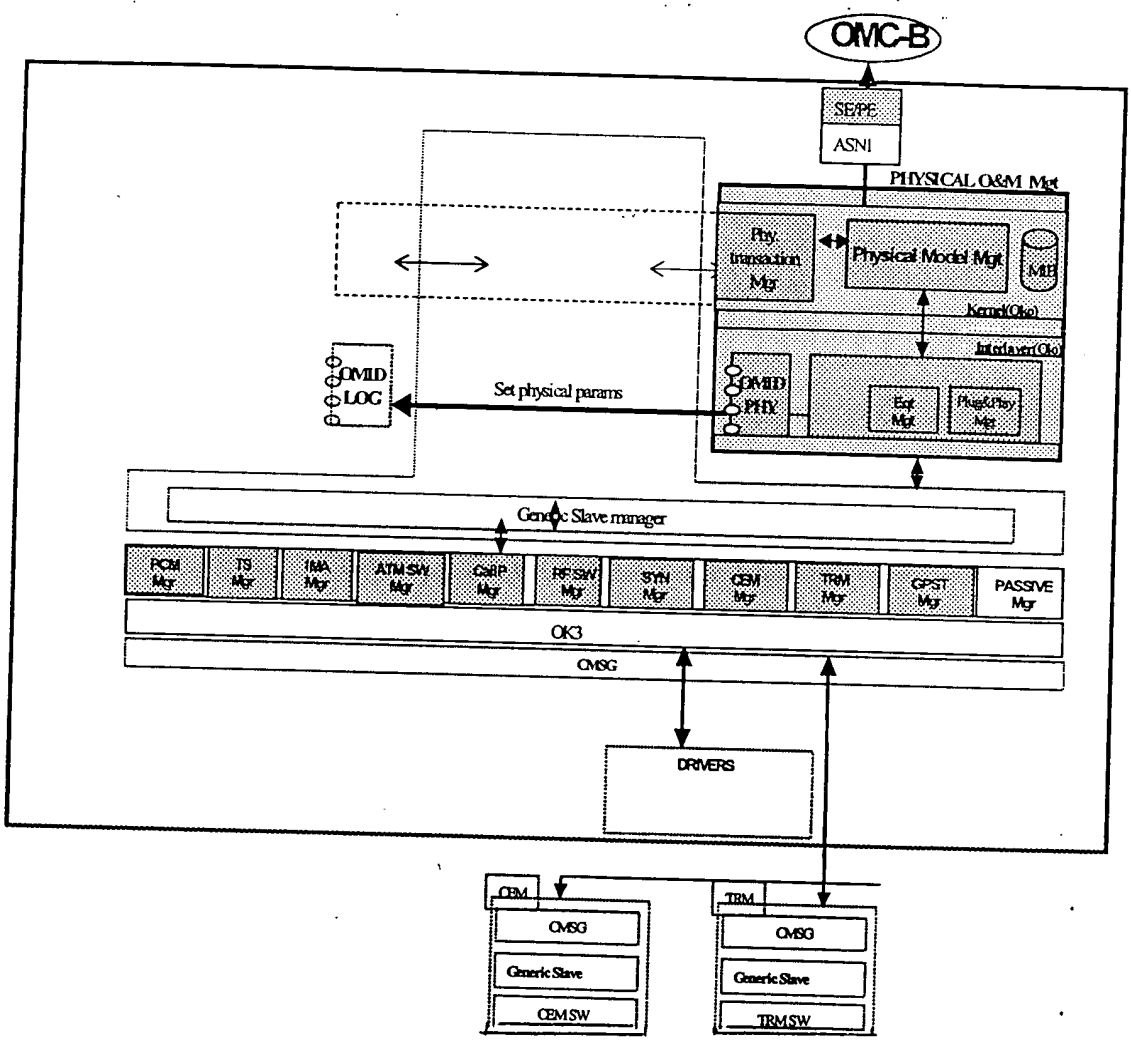

OMC-B
SE/PE
ASN1
PHYSICAL O&M Mgt
Phy Transaction Mgr
Physical Model Mgt
MIB
Kernel(Qio)
Interlayer(Qio)
OMID LOG
Set physical params
OMID PHY
Ext Mgr
Plug&Play Mgr
Generic Slave manager
FCM Mgr
TS Mgr
IMA Mgr
ATM SW Mgr
CellP Mgr
RF SW Mgr
SYN Mgr
CEM Mgr
TRM Mgr
GPST Mgr
PASSIVE Mgr
OK3
OMSG
DRIVERS
CEM
OMSG
Generic Slave
CEM SW
TRM
OMSG
Generic Slave
TRM SW

FIG. 31

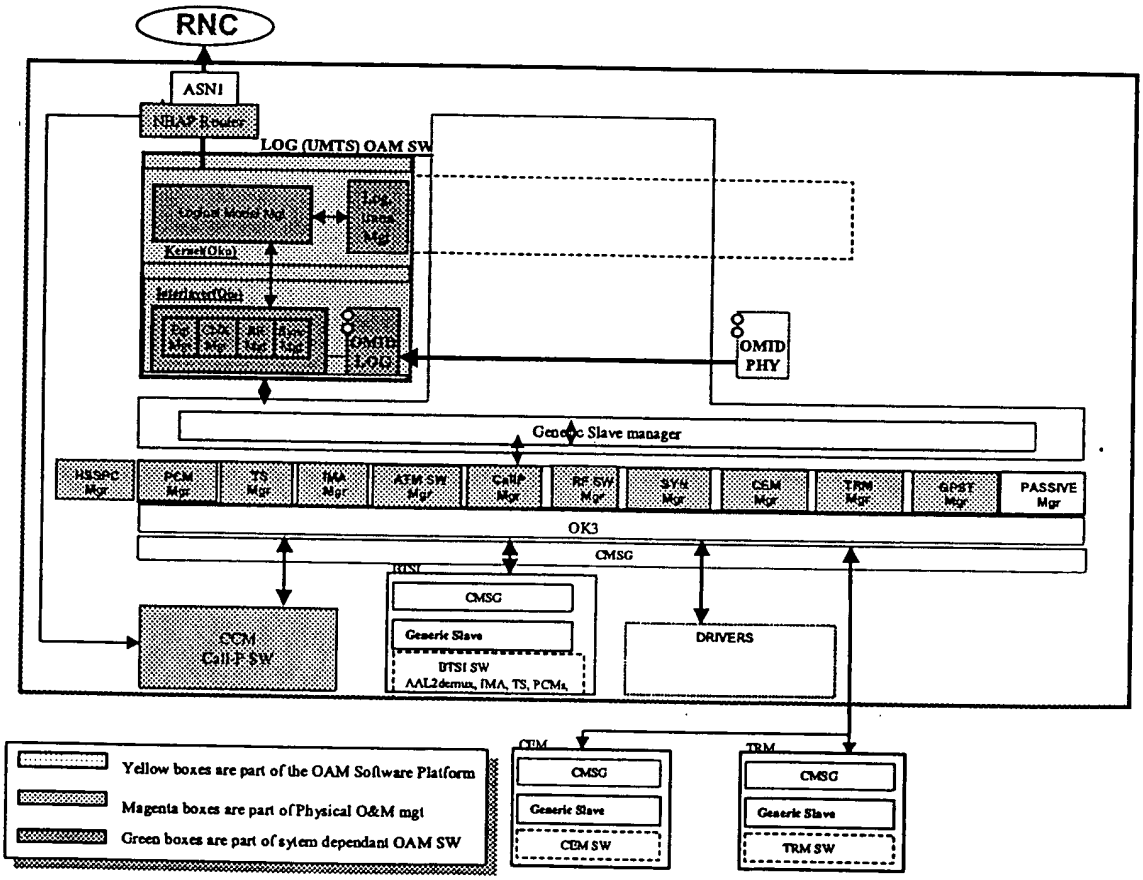

RNC
ASN1
NBAP Router
LOG (UMTS) OAM SW
Logical Model Mgr
Link Mgr
Kernel(Oko)
Interface(Qbe)
OMID LOG
OMID PHY
Generic Slave manager
HSSPA Mgr
PCM Mgr
TS Mgr
IMA Mgr
ATM SW Mgr
CellP Mgr
RF SW Mgr
SYN Mgr
CEM Mgr
TRM Mgr
GPST Mgr
PASSIVE Mgr
OK3
CMSG
DTSI
CMSG
Generic Slave
DTSI SW
AAL2demux, IMA, TS, PCMs,
CCM
Call-P SW
DRIVERS
CEM
CMSG
Generic Slave
CEM SW
TRM
CMSG
Generic Slave
TRM SW
Yellow boxes are part of the OAM Software Platform
Magenta boxes are part of Physical O&M mgt
Green boxes are part of sytem dependant OAM SW

FIG. 32

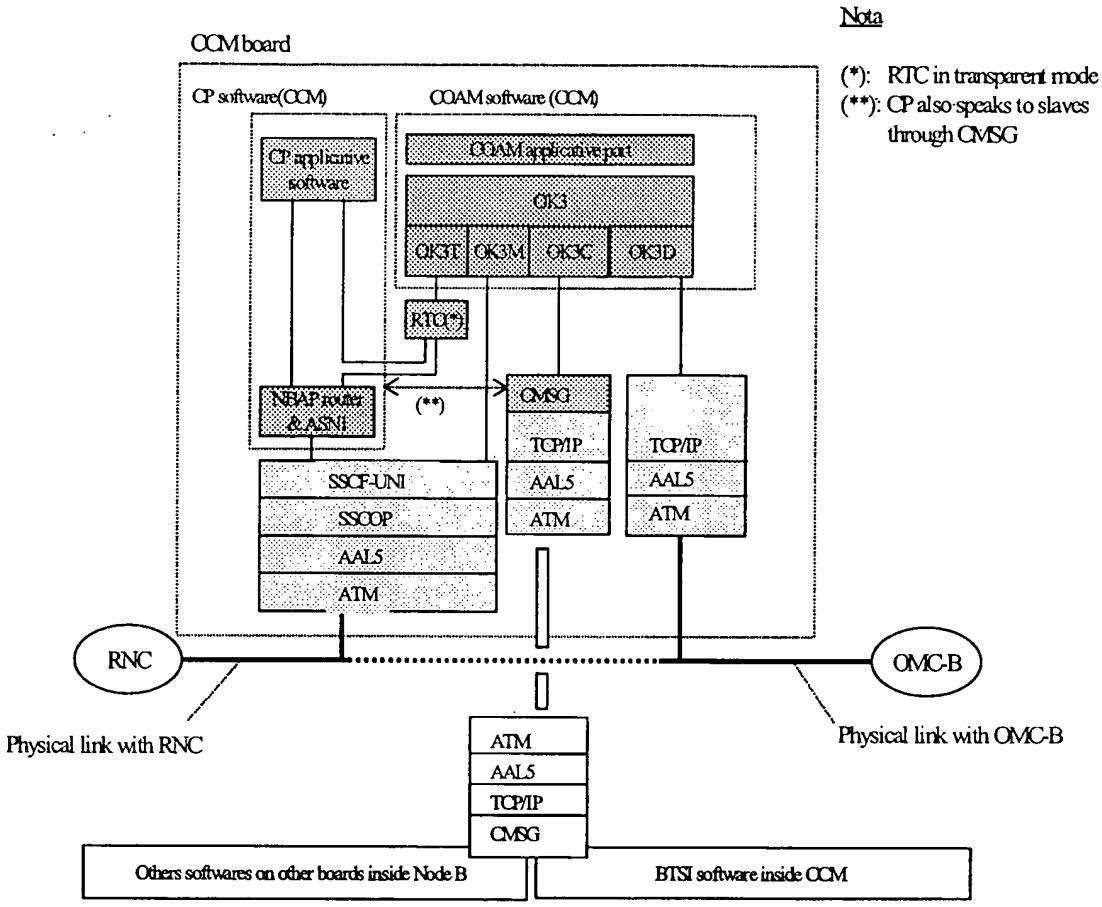

Nota
(*): RTC in transparent mode
(**): CP also speaks to slaves through CMSG
CCM board
CP software(CCM)
COAM software (CCM)
CP applicative software
COAM applicative part
OK3
OK3T
OK3M
OK3C
OK3D
RTC(*)
NBAP router & ASNI
(**)
CMSG
TCP/IP
AAL5
ATM
TCP/IP
AAL5
ATM
SSCF-UNI
SSCOP
AAL5
ATM
RNC
OMC-B
Physical link with RNC
Physical link with OMC-B
ATM
AAL5
TCP/IP
CMSG
Others softwares on other boards inside Node B
BTSI software inside CCM

FIG. 33

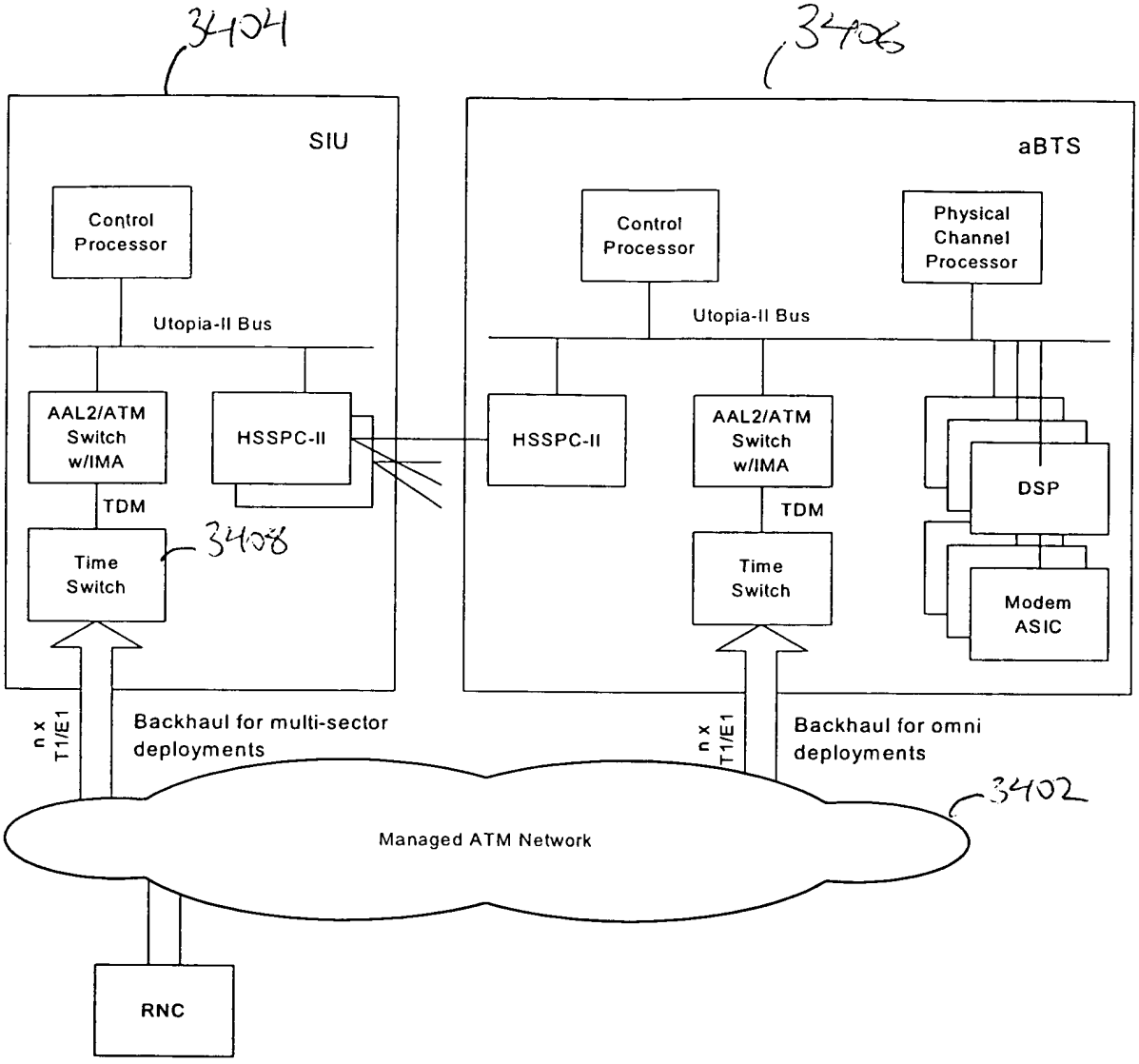

3404
3406
SIU
aBTS
Control Processor
Utopia-II Bus
AAL2/ATM Switch w/IMA
HSSPC-II
TDM
Time Switch
3408
Control Processor
Physical Channel Processor
Utopia-II Bus
HSSPC-II
AAL2/ATM Switch w/IMA
TDM
Time Switch
DSP
Modem ASIC
n x T1/E1
Backhaul for multi-sector deployments
n x T1/E1
Backhaul for omni deployments
3402
Managed ATM Network
RNC

FIG. 34

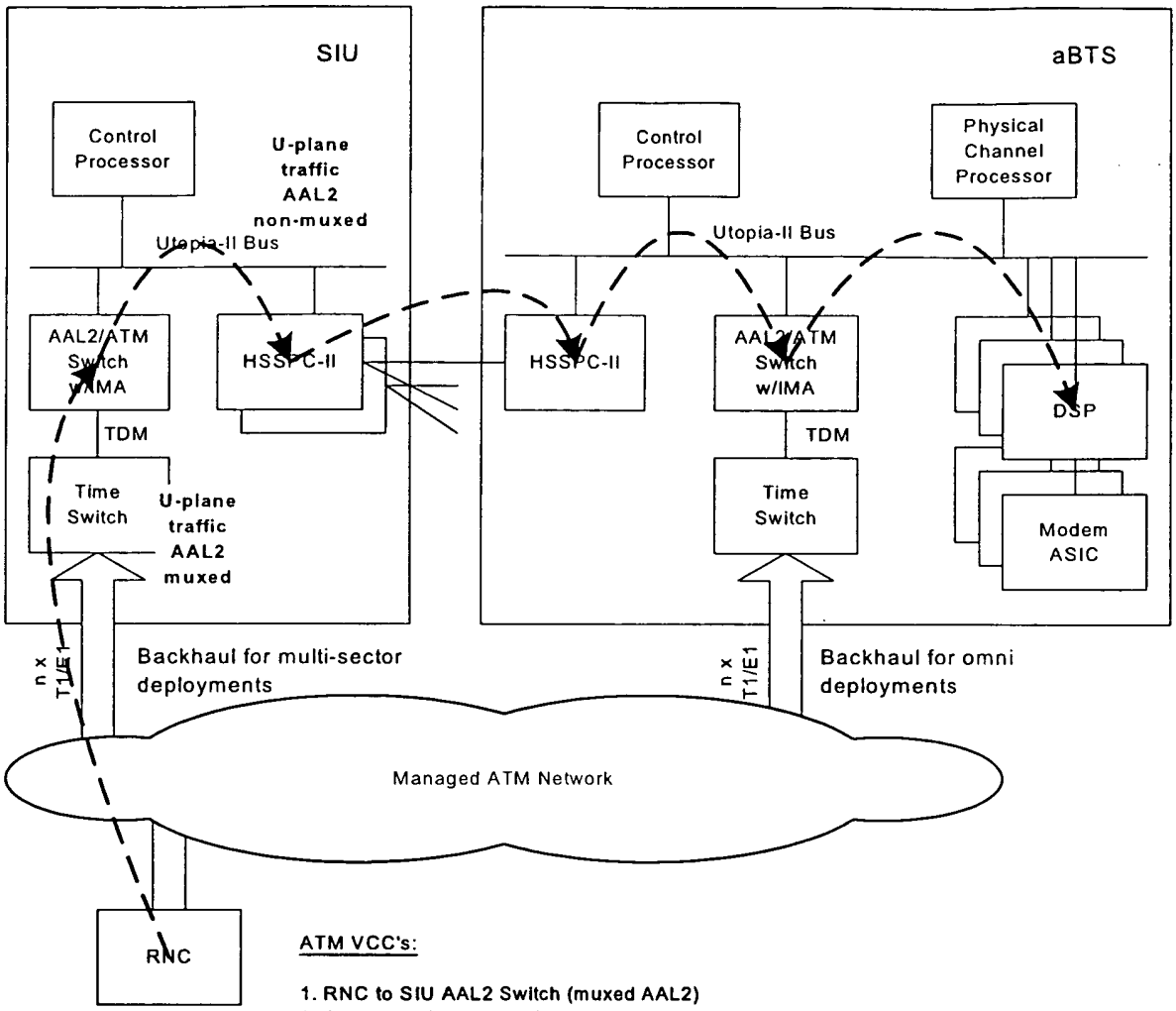
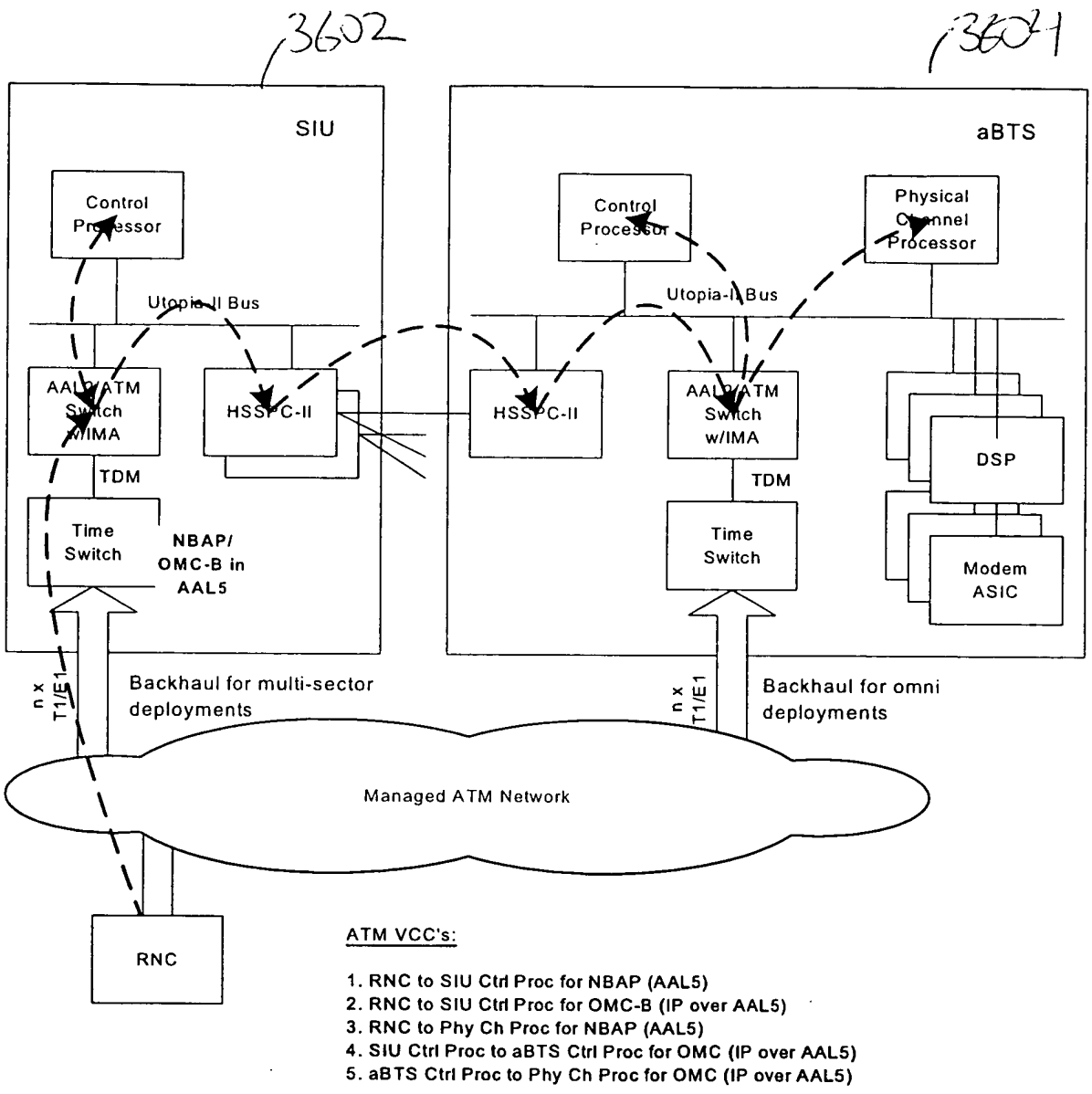

SIU
aBTS
Control Processor
U-plane traffic AAL2 non-muxed
Utopia-II Bus
AAL2/ATM Switch w/IMA
HSSPC-II
TDM
Time Switch
U-plane traffic AAL2 muxed
Control Processor
Physical Channel Processor
Utopia-II Bus
HSSPC-II
AAL2/ATM Switch w/IMA
TDM
Time Switch
DSP
Modem ASIC
n x T1/E1
Backhaul for multi-sector deployments
n x T1/E1
Backhaul for omni deployments
Managed ATM Network
RNC
ATM VCC's:
1. RNC to SIU AAL2 Switch (muxed AAL2)
2. SIU AAL2 Switch to DSP (non-muxed AAL2)

FIG. 35



ATM VCC's:

1. RNC to SIU Ctrl Proc for NBAP (AAL5)
2. RNC to SIU Ctrl Proc for OMC-B (IP over AAL5)
3. RNC to Phy Ch Proc for NBAP (AAL5)
4. SIU Ctrl Proc to aBTS Ctrl Proc for OMC (IP over AAL5)
5. aBTS Ctrl Proc to Phy Ch Proc for OMC (IP over AAL5)

FIG. 36

UMTS '99 (ATM backhaul) NBAP Flow

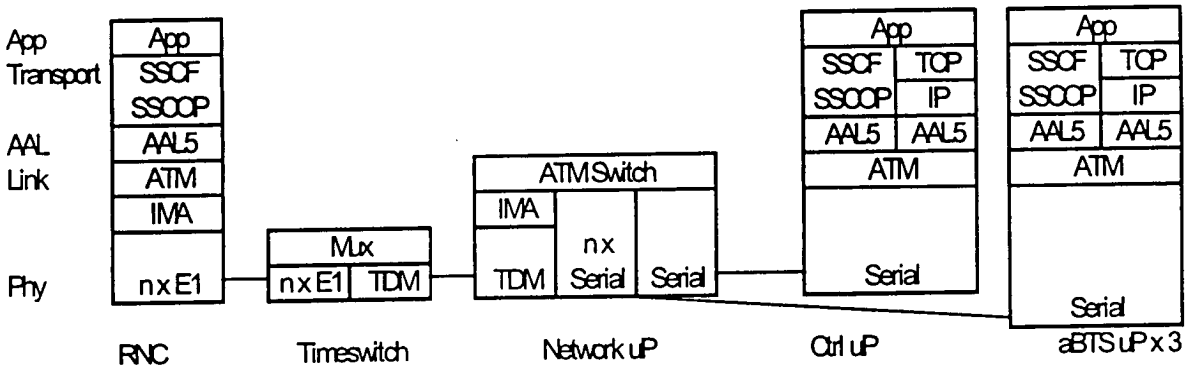


FIG. 37

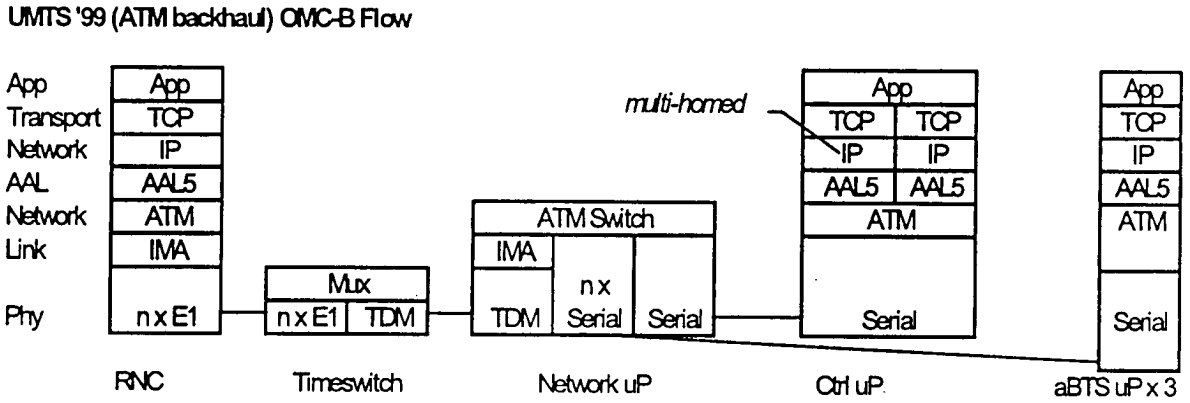


FIG. 38

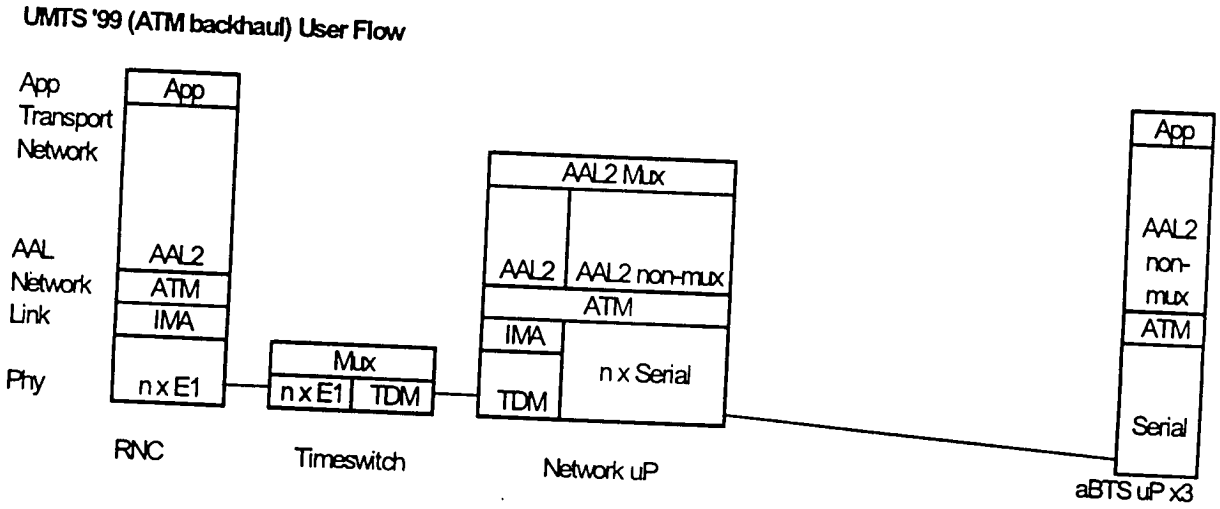

UMTS '99 (ATM backhaul) User Flow
App
Transport
Network
AAL
Network
Link
Phy
App
AAL2
ATM
IMA
n x E1
RNC
Mux
n x E1
TDM
Timeswitch
AAL2 Mux
AAL2
AAL2 non-mux
ATM
IMA
TDM
n x Serial
Network uP
App
AAL2
non-
mux
ATM
Serial
aBTS uP x3

FIG. 39

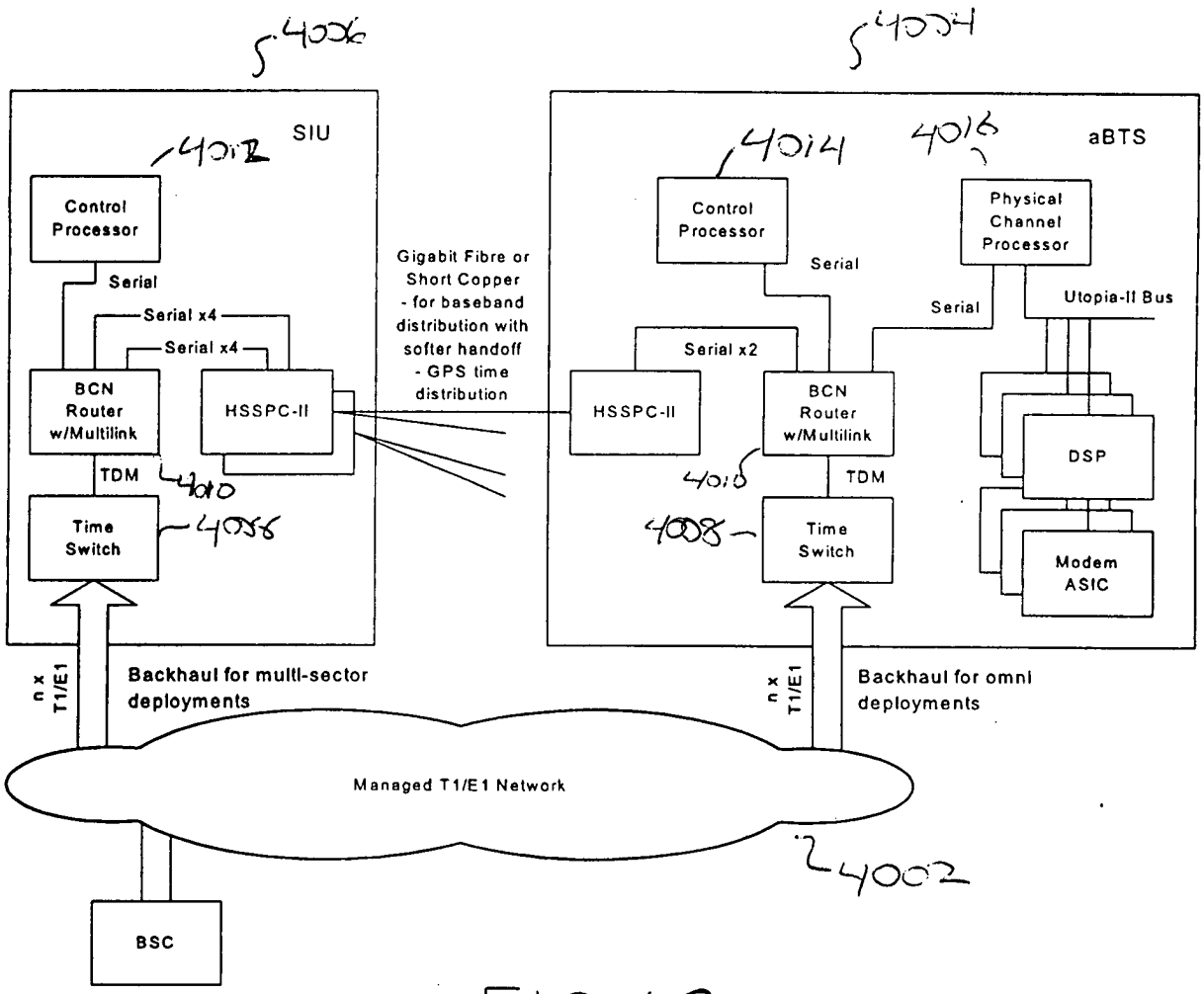

4006
4004
SIU
4012
aBTS
4014
4016
Control Processor
Serial
Serial x4
Serial x4
BCN Router w/Multilink
HSSPC-II
TDM
4010
Time Switch
4008
Gigabit Fibre or Short Copper - for baseband distribution with softer handoff - GPS time distribution
Control Processor
Serial
Physical Channel Processor
Serial
Utopia-II Bus
Serial x2
HSSPC-II
BCN Router w/Multilink
4018
TDM
Time Switch
DSP
Modem ASIC
n x T1/E1
Backhaul for multi-sector deployments
n x T1/E1
Backhaul for omni deployments
Managed T1/E1 Network
4002
BSC

FIG. 40

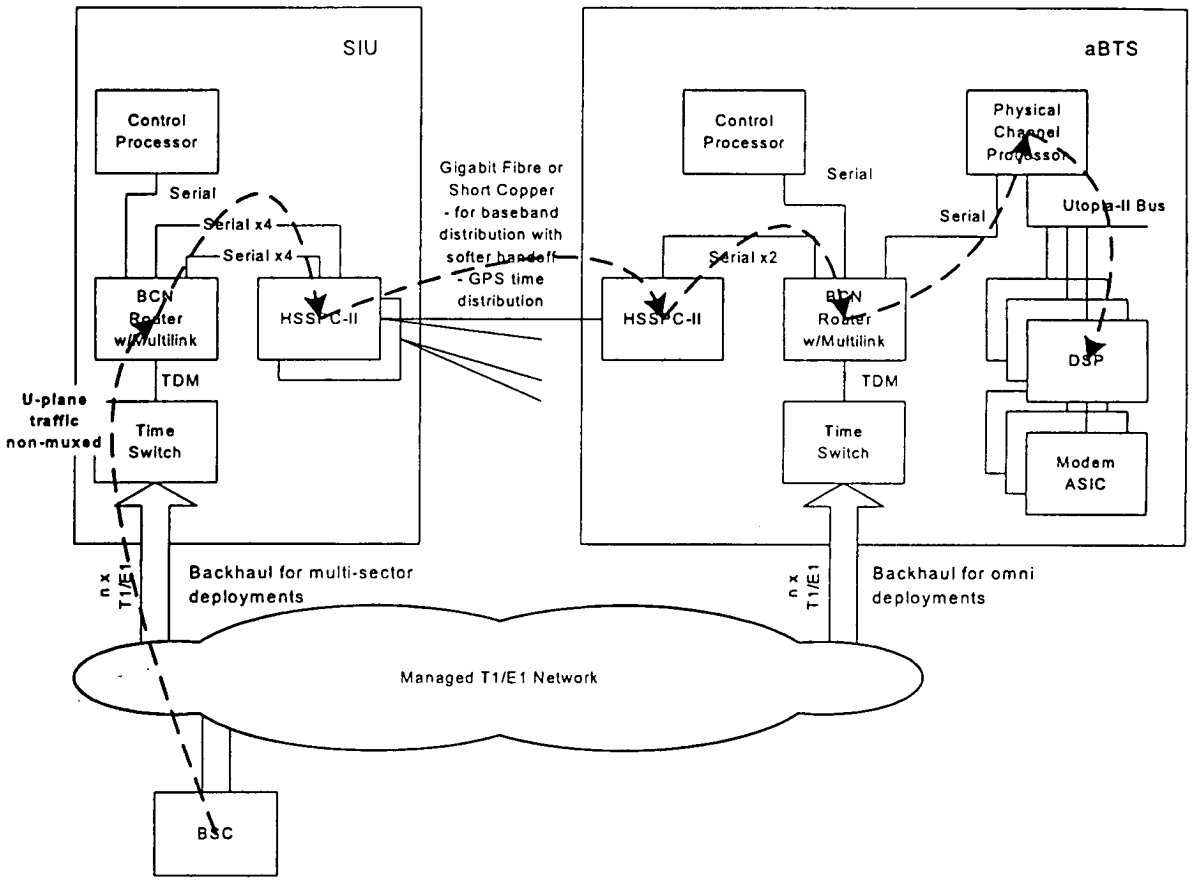

SIU
aBTS
Control Processor
Serial
Serial x4
Serial x4
BCN Router w/Multilink
HSSI/C-II
TDM
U-plane traffic non-muxed
Time Switch
Gigabit Fibre or Short Copper - for baseband distribution with softer handoff - GPS time distribution
Control Processor
Serial
Serial x2
HSSI/C-II
BCN Router w/Multilink
TDM
Time Switch
Physical Channel Processor
Serial
Utopia-II Bus
DSP
Modem ASIC
n x T1/E1
Backhaul for multi-sector deployments
n x T1/E1
Backhaul for omni deployments
Managed T1/E1 Network
BSC

FIG. 41

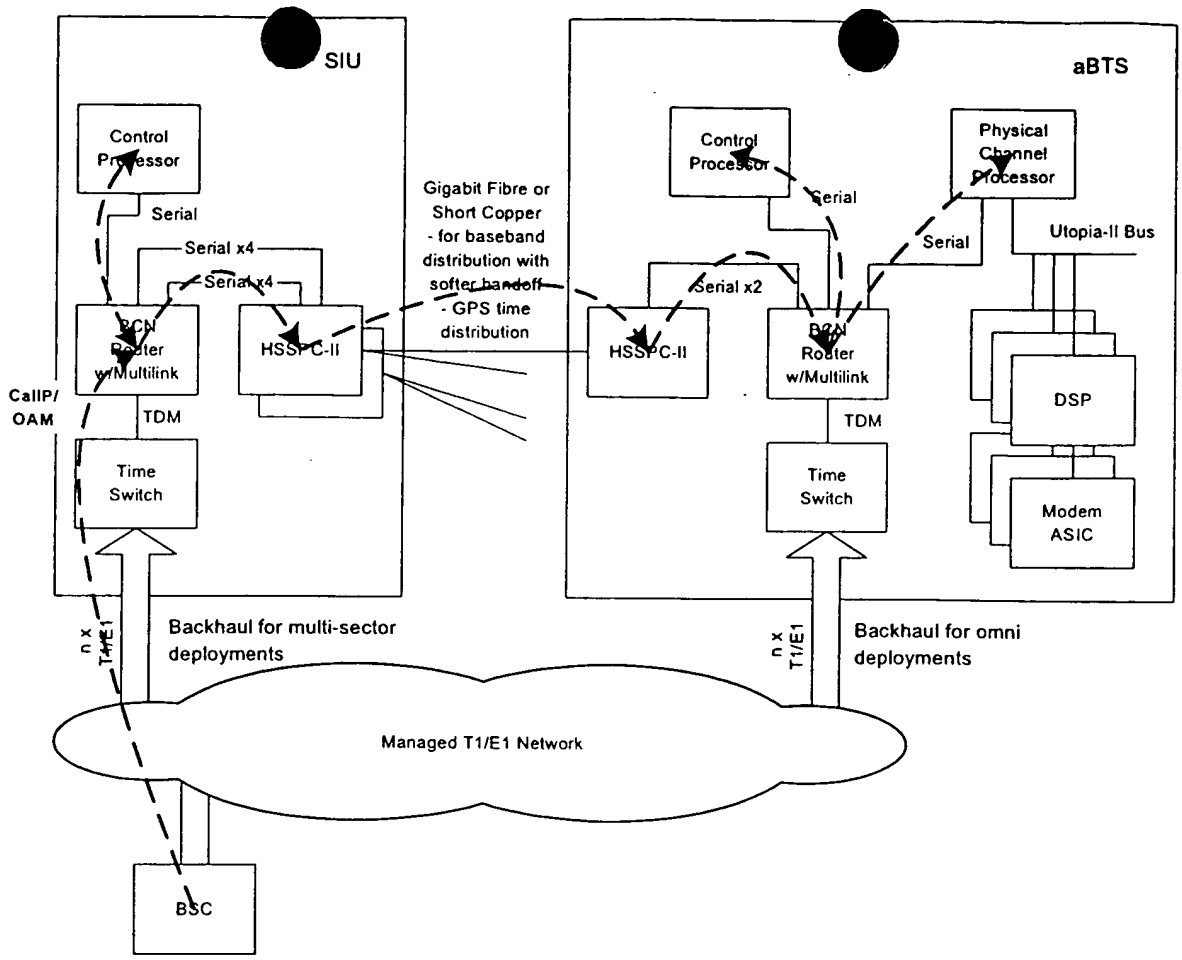

SIU
aBTS
Control Processor
Serial
Serial x4
Serial x4
BCN Router w/Multilink
HSSPC-II
CallP/ OAM
TDM
Time Switch
Gigabit Fibre or Short Copper - for baseband distribution with softer handoff - GPS time distribution
Control Processor
Physical Channel Processor
Serial
Serial
Utopia-II Bus
Serial x2
HSSPC-II
BCN Router w/Multilink
TDM
Time Switch
DSP
Modem ASIC
n x T1/E1
Backhaul for multi-sector deployments
n x T1/E1
Backhaul for omni deployments
Managed T1/E1 Network
BSC

FIG. 42

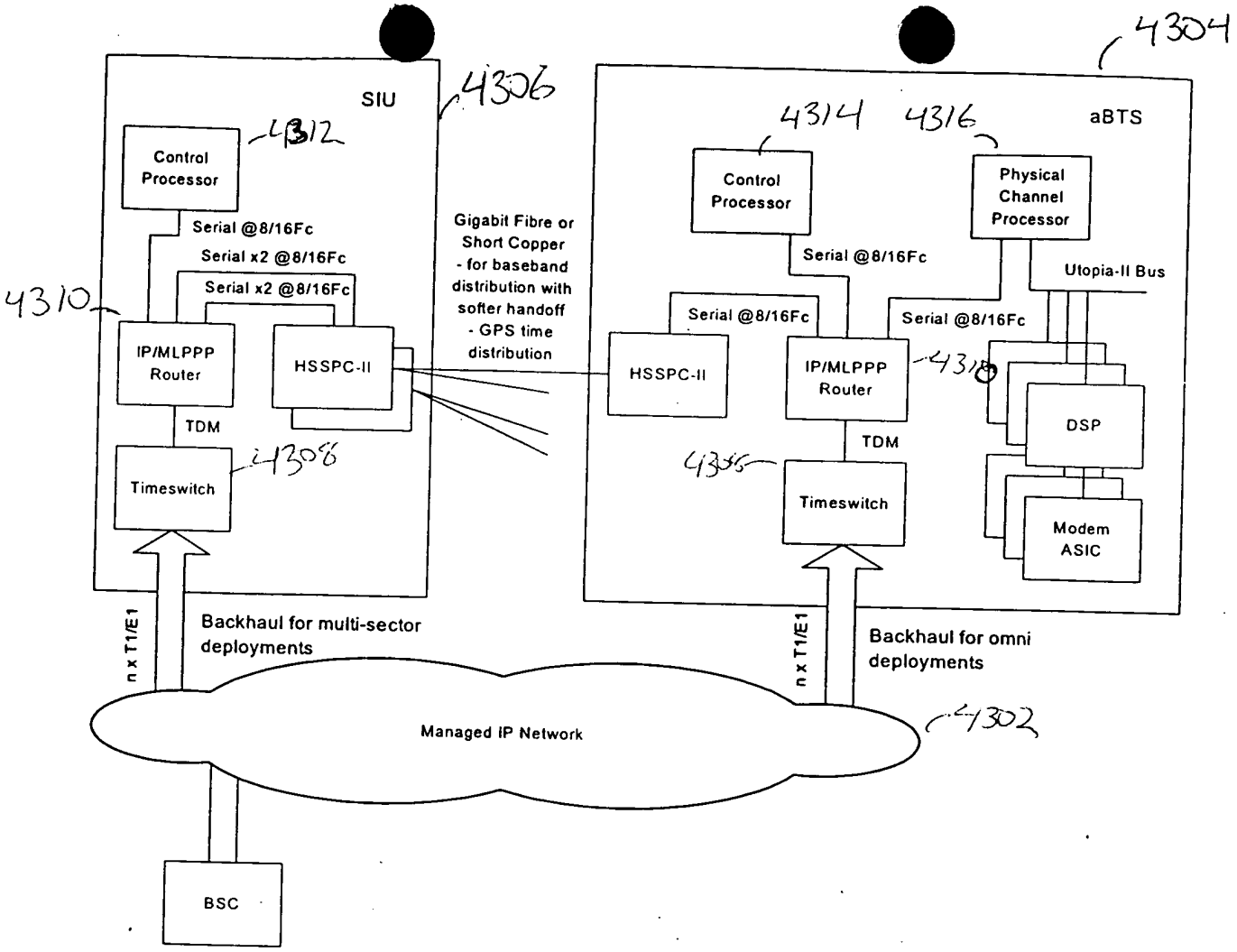

4304
SIU
4306
4312
Control Processor
Serial @8/16Fc
Serial x2 @8/16Fc
Serial x2 @8/16Fc
4310
IP/MLPPP Router
HSSPC-II
TDM
Timeswitch
4308
Gigabit Fibre or Short Copper - for baseband distribution with softer handoff - GPS time distribution
4314
4316
aBTS
Control Processor
Physical Channel Processor
Serial @8/16Fc
Utopia-II Bus
Serial @8/16Fc
Serial @8/16Fc
HSSPC-II
IP/MLPPP Router
4318
DSP
TDM
4315
Timeswitch
Modem ASIC
n x T1/E1
Backhaul for multi-sector deployments
n x T1/E1
Backhaul for omni deployments
Managed IP Network
4302
BSC

FIG. 43

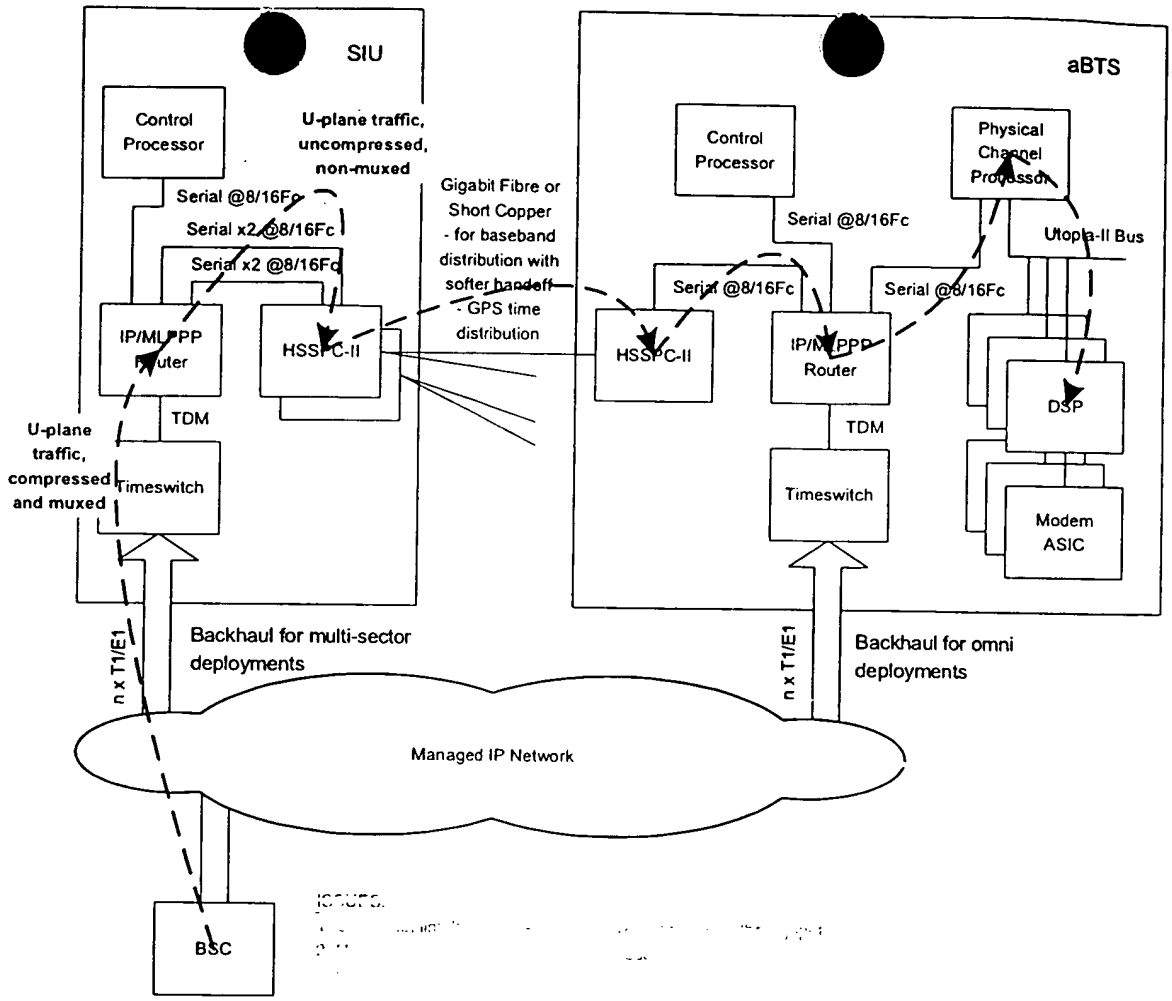

SIU
Control Processor
U-plane traffic, uncompressed, non-muxed
Serial @8/16Fc
Serial x2 @8/16Fc
Serial x2 @8/16Fc
IP/MLPPP Router
HSSPC-II
TDM
U-plane traffic, compressed and muxed
Timeswitch
n x T1/E1
Backhaul for multi-sector deployments
Gigabit Fibre or Short Copper - for baseband distribution with softer handoff - GPS time distribution
aBTS
Control Processor
Physical Channel Processor
Serial @8/16Fc
Utopia-II Bus
Serial @8/16Fc
Serial @8/16Fc
HSSPC-II
IP/MLPPP Router
TDM
DSP
Timeswitch
Modem ASIC
n x T1/E1
Backhaul for omni deployments
Managed IP Network
BSC

FIG. 44

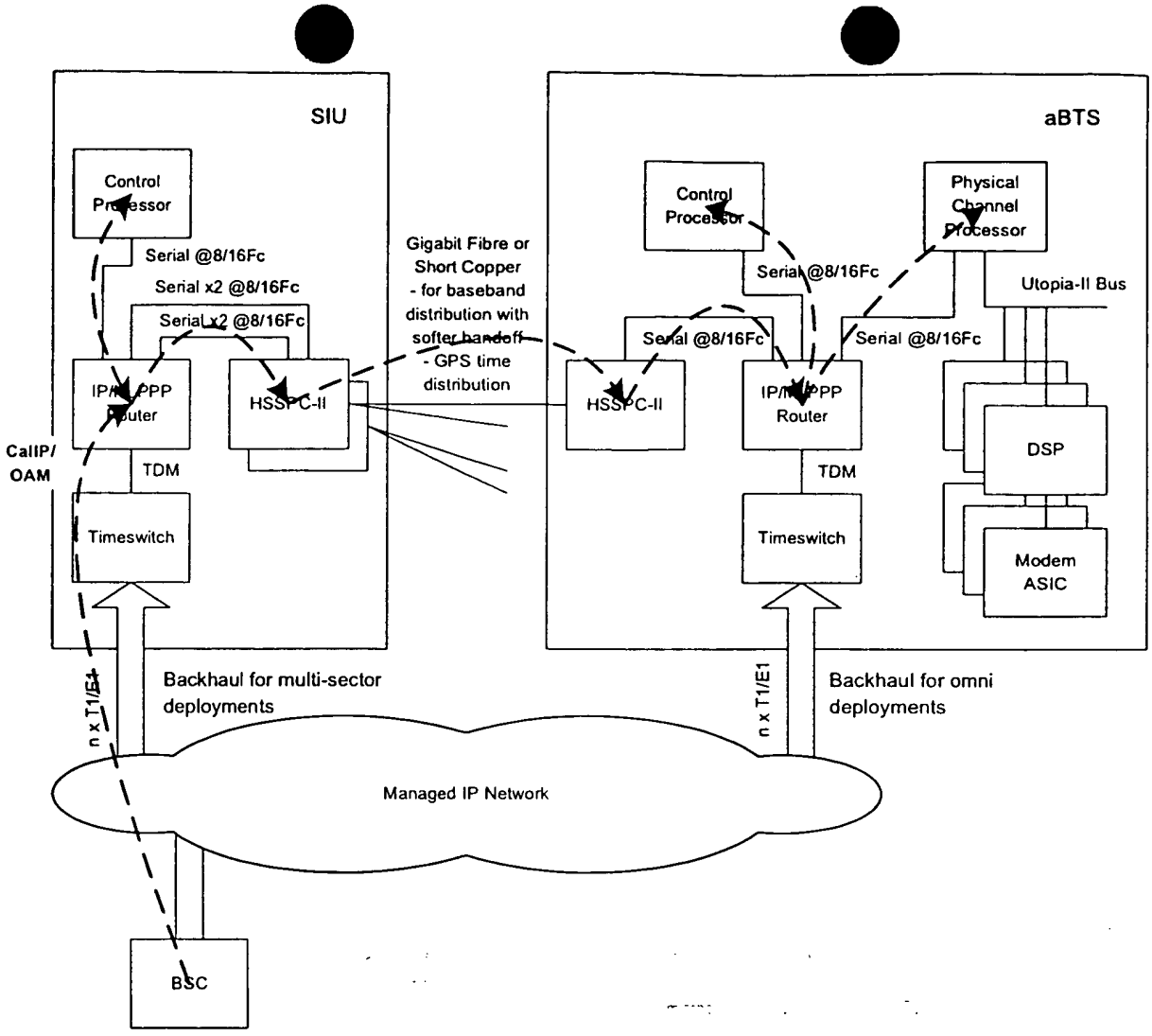

SIU
aBTS
Control Processor
Serial @8/16Fc
Serial x2 @8/16Fc
Serial x2 @8/16Fc
IP/MLPPP Router
HSSPC-II
TDM
Timeswitch
CallP/ OAM
Gigabit Fibre or Short Copper - for baseband distribution with softer handoff - GPS time distribution
Control Processor
Physical Channel Processor
Serial @8/16Fc
Utopia-II Bus
Serial @8/16Fc
Serial @8/16Fc
HSSPC-II
IP/MLPPP Router
TDM
Timeswitch
DSP
Modem ASIC
n x T1/E1
Backhaul for multi-sector deployments
n x T1/E1
Backhaul for omni deployments
Managed IP Network
BSC

FIG. 45

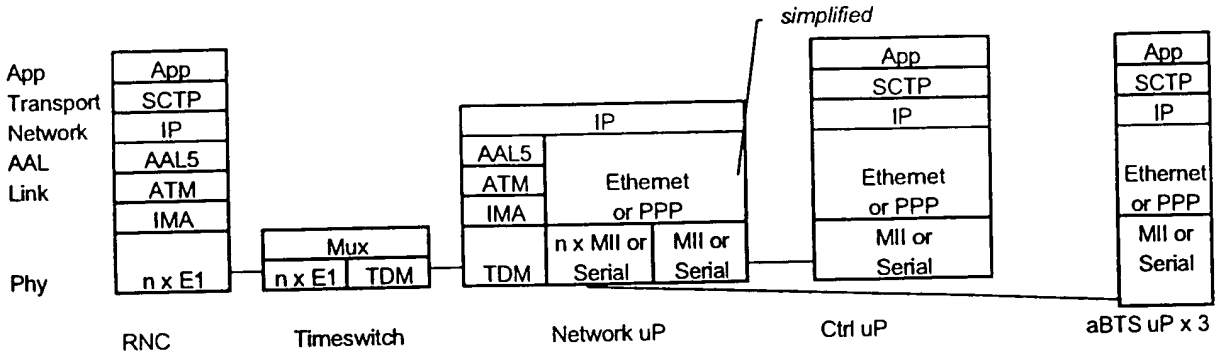

simplified
App
Transport
Network
AAL
Link
Phy
App
SCTP
IP
AAL5
ATM
IMA
n x E1
Mux
n x E1
TDM
IP
AAL5
ATM
IMA
TDM
Ethernet or PPP
n x MII or Serial
MII or Serial
App
SCTP
IP
Ethernet or PPP
MII or Serial
App
SCTP
IP
Ethernet or PPP
MII or Serial
RNC
Timeswitch
Network uP
Ctrl uP
aBTS uP x 3

FIG. 46

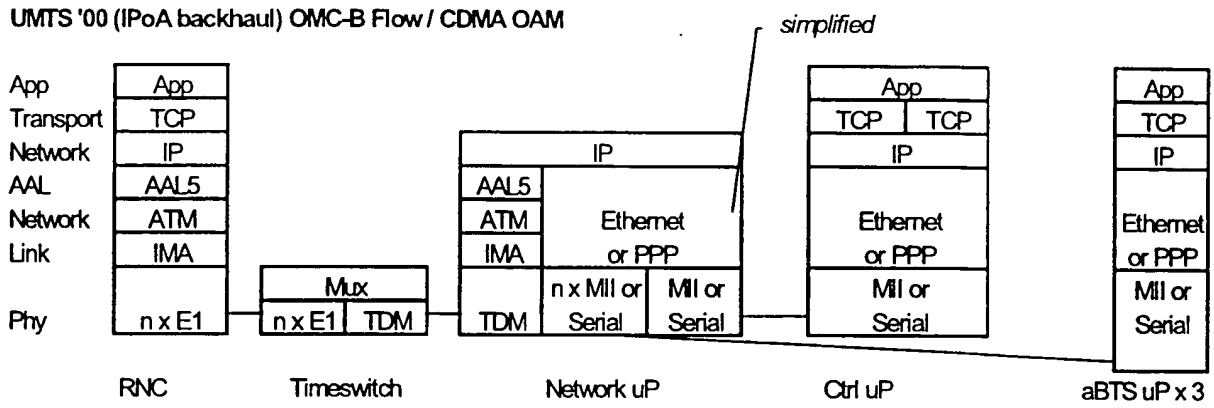

UMTS '00 (IPoA backhaul) OMC-B Flow / CDMA OAM
simplified
App
Transport
Network
AAL
Network
Link
Phy
App
TCP
IP
AAL5
ATM
IMA
n x E1
Mux
n x E1
TDM
IP
AAL5
ATM
IMA
TDM
Ethernet or PPP
n x MII or Serial
MII or Serial
App
TCP
TCP
IP
Ethernet or PPP
MII or Serial
App
TCP
IP
Ethernet or PPP
MII or Serial
RNC
Timeswitch
Network uP
Ctrl uP
aBTS uP x 3

FIG. 47

UMTS '00 (IPoA backhaul) User Flow / CDMA A.bis User Traffic

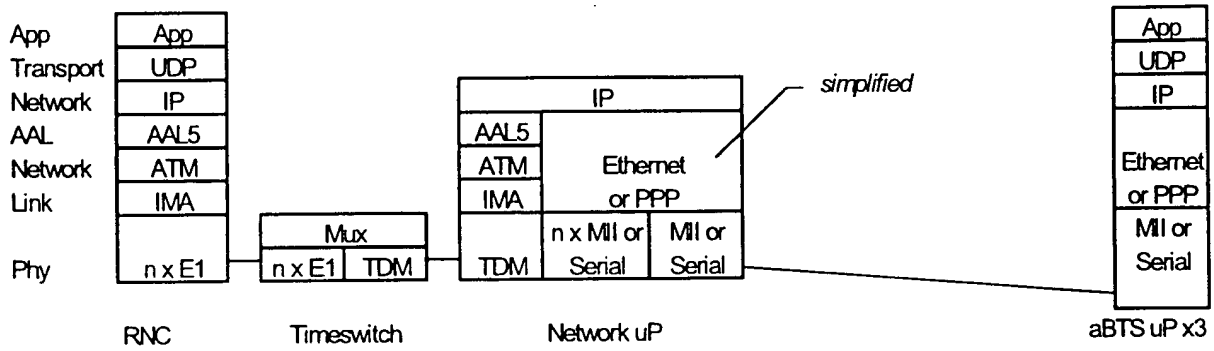


FIG. 48

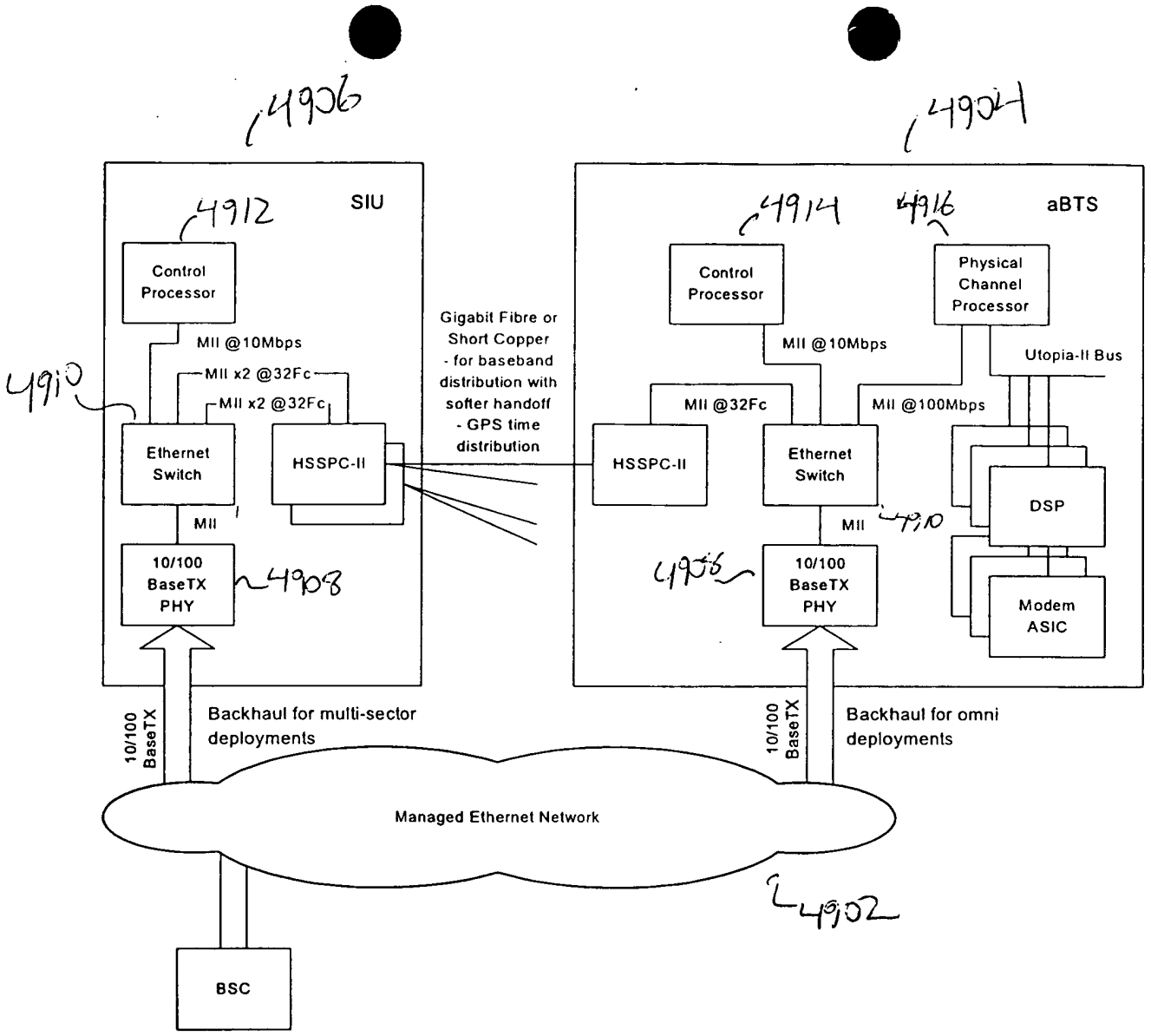

4906
4904
4912
SIU
Control Processor
MII @10Mbps
MII x2 @32Fc
MII x2 @32Fc
4910
Ethernet Switch
HSSPC-II
MII
10/100 BaseTX PHY
4908
Gigabit Fibre or Short Copper - for baseband distribution with softer handoff - GPS time distribution
4914
4916
aBTS
Control Processor
Physical Channel Processor
MII @10Mbps
Utopia-II Bus
MII @32Fc
MII @100Mbps
HSSPC-II
Ethernet Switch
DSP
MII
4910
4906
10/100 BaseTX PHY
Modem ASIC
10/100 BaseTX
Backhaul for multi-sector deployments
10/100 BaseTX
Backhaul for omni deployments
Managed Ethernet Network
4902
BSC

FIG. 49

UMTS '00 (IP/Ethernet backhaul) NBAP Flow / CDMA A.bis

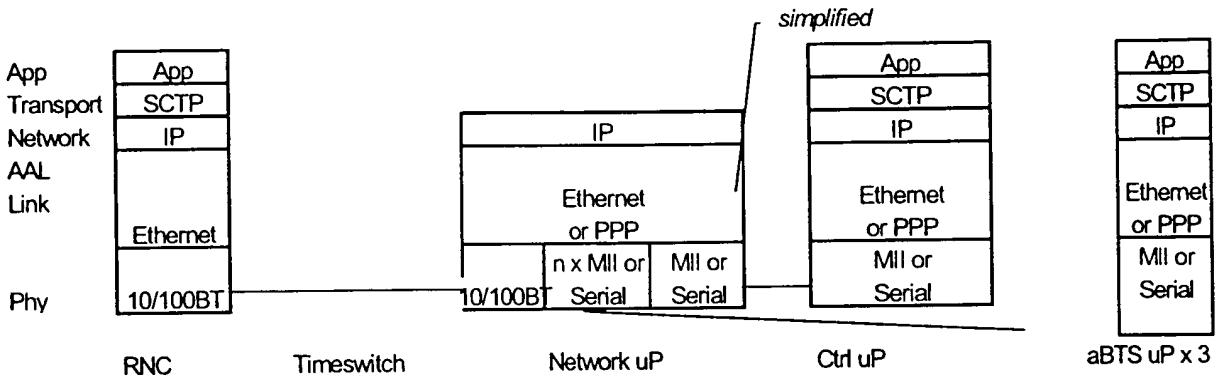


FIG. 50

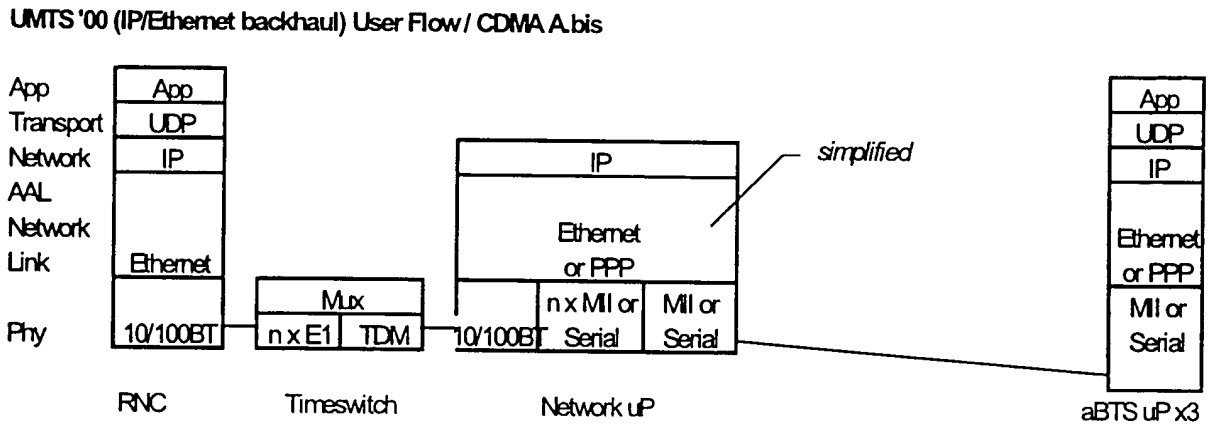

UMTS '00 (IP/Ethernet backhaul) User Flow / CDMA A.bis
App
Transport
Network
AAL
Network
Link
Phy
App
UDP
IP
Ethernet
10/100BT
Mux
n x E1
TDM
IP
Ethernet
or PPP
10/100BT
n x MI or
Serial
MI or
Serial
simplified
App
UDP
IP
Ethernet
or PPP
MI or
Serial
RNC
Timeswitch
Network uP
aBTS uP x3

FIG. 51

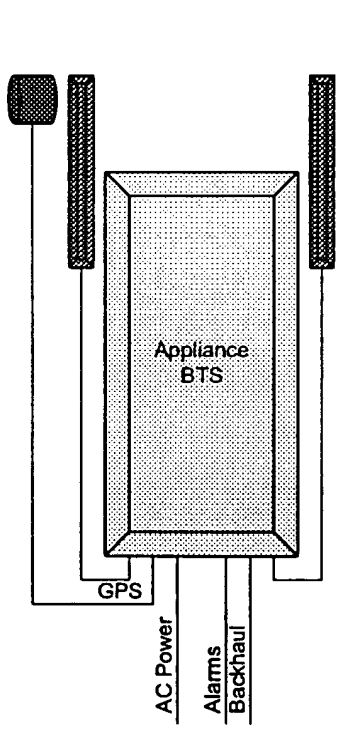


FIG. 52

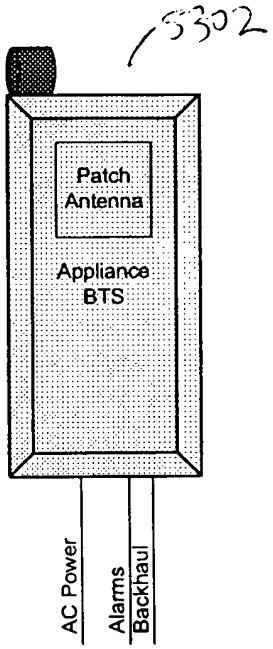


FIG. 53

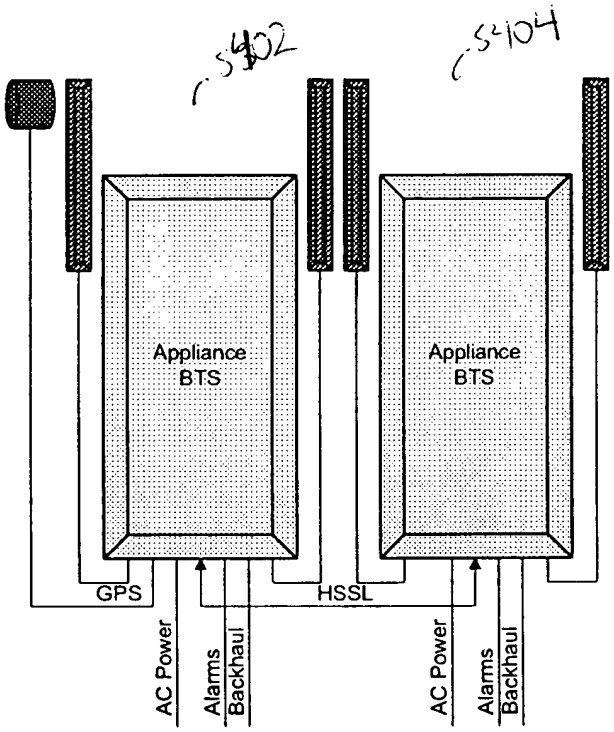

5402
5404
Appliance BTS
Appliance BTS
GPS
HSSL
AC Power
Alarms
Backhaul
AC Power
Alarms
Backhaul

FIG. 54

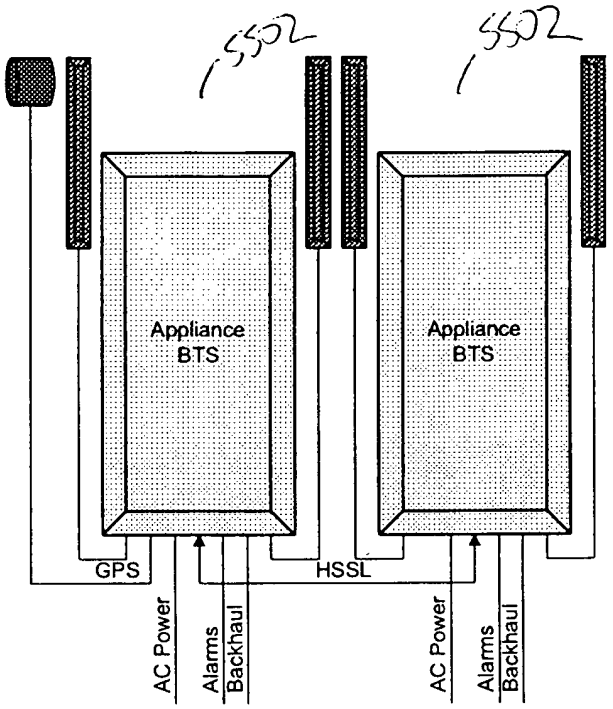

5502
5502
Appliance BTS
Appliance BTS
GPS
HSSL
AC Power
Alarms
Backhaul
AC Power
Alarms
Backhaul

FIG. 55

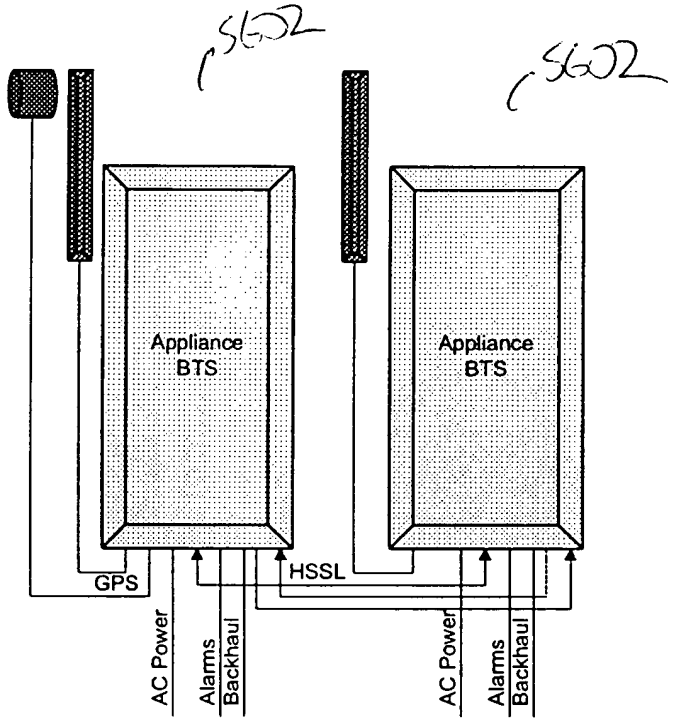

5602
5602
Appliance BTS
Appliance BTS
GPS
HSSL
AC Power
Alarms
Backhaul
AC Power
Alarms
Backhaul

FIG. 56

5702

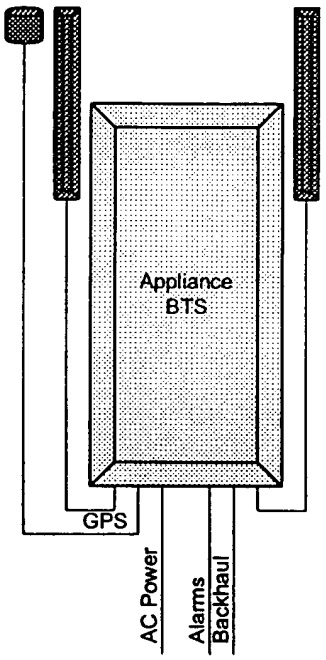


FIG. 57

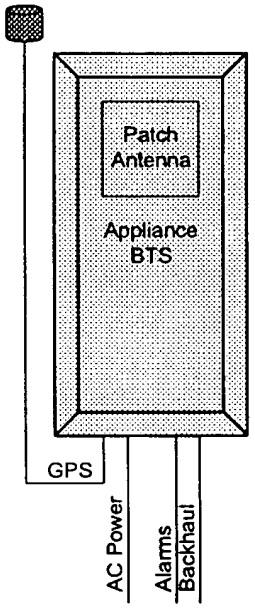


FIG. 58

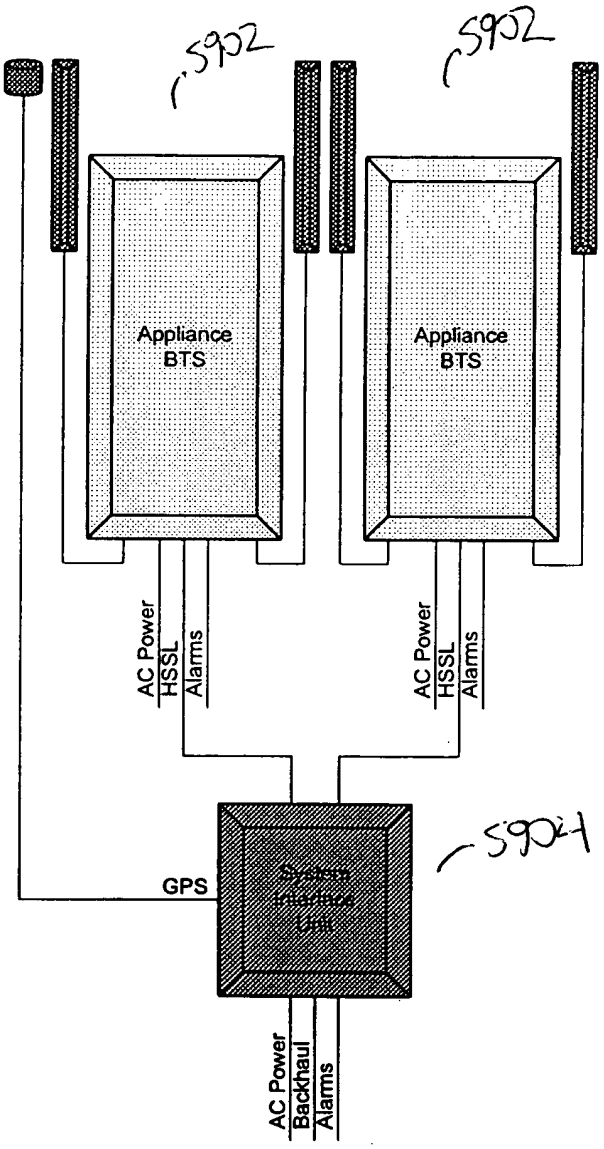

5902
5902
Appliance BTS
Appliance BTS
AC Power
HSSL
Alarms
AC Power
HSSL
Alarms
5904
GPS
System Interface Unit
AC Power
Backhaul
Alarms

FIG. 59

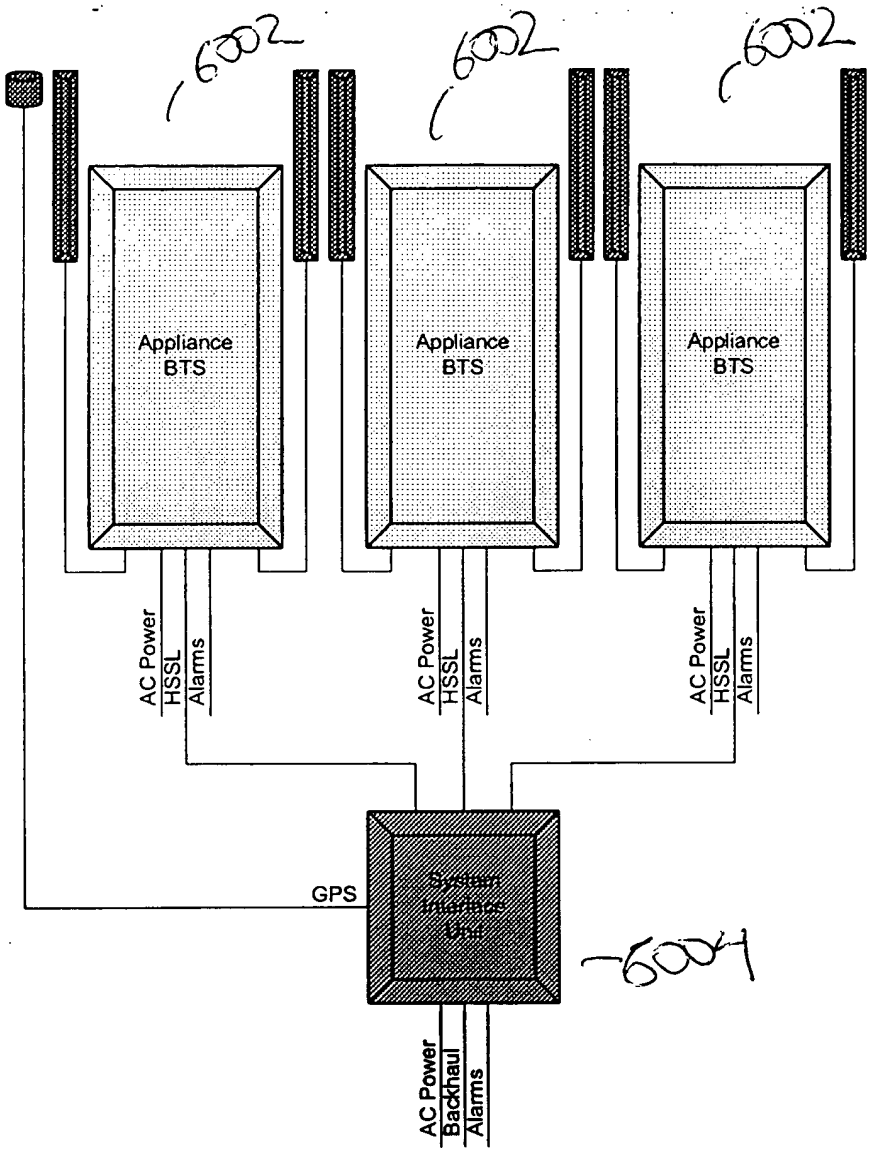

6002
6002
6002
Appliance BTS
Appliance BTS
Appliance BTS
AC Power
HSSL
Alarms
AC Power
HSSL
Alarms
AC Power
HSSL
Alarms
GPS
System Interface Unit
6004
AC Power
Backhaul
Alarms

FIG. 60

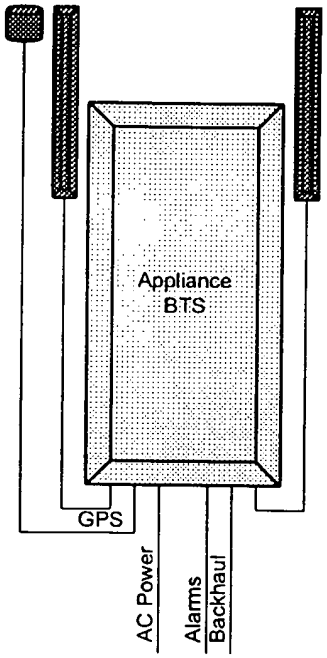


FIG. 61

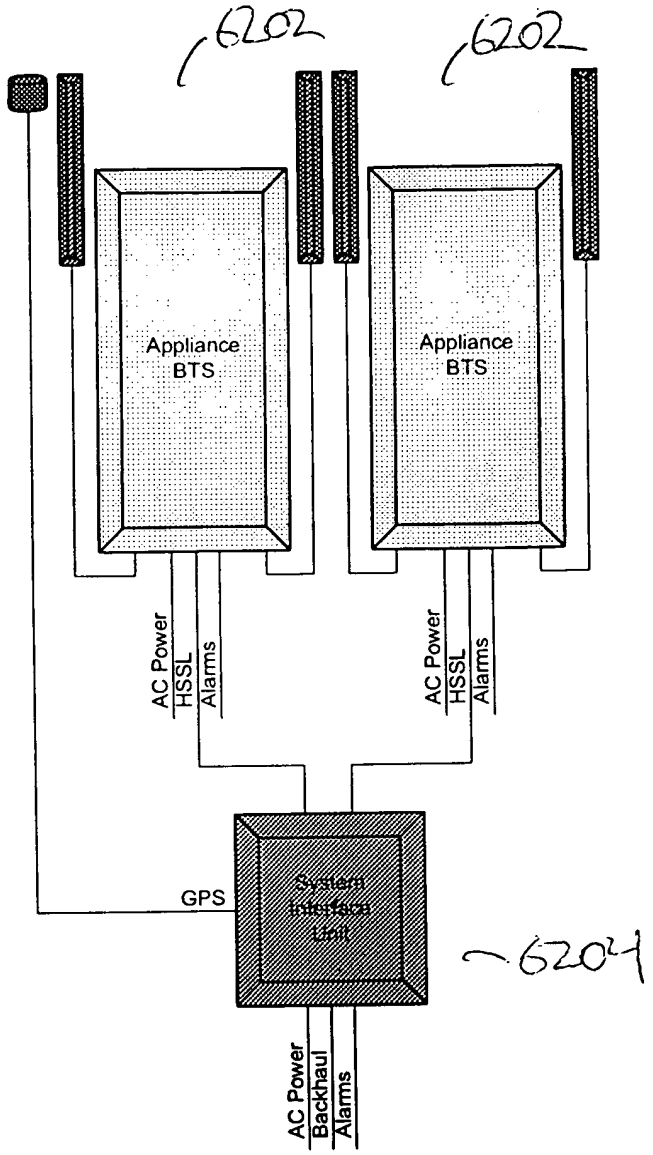

6202
6202
Appliance BTS
Appliance BTS
AC Power
HSSL
Alarms
AC Power
HSSL
Alarms
GPS
System Interface Unit
6204
AC Power
Backhaul
Alarms

FIG. 62

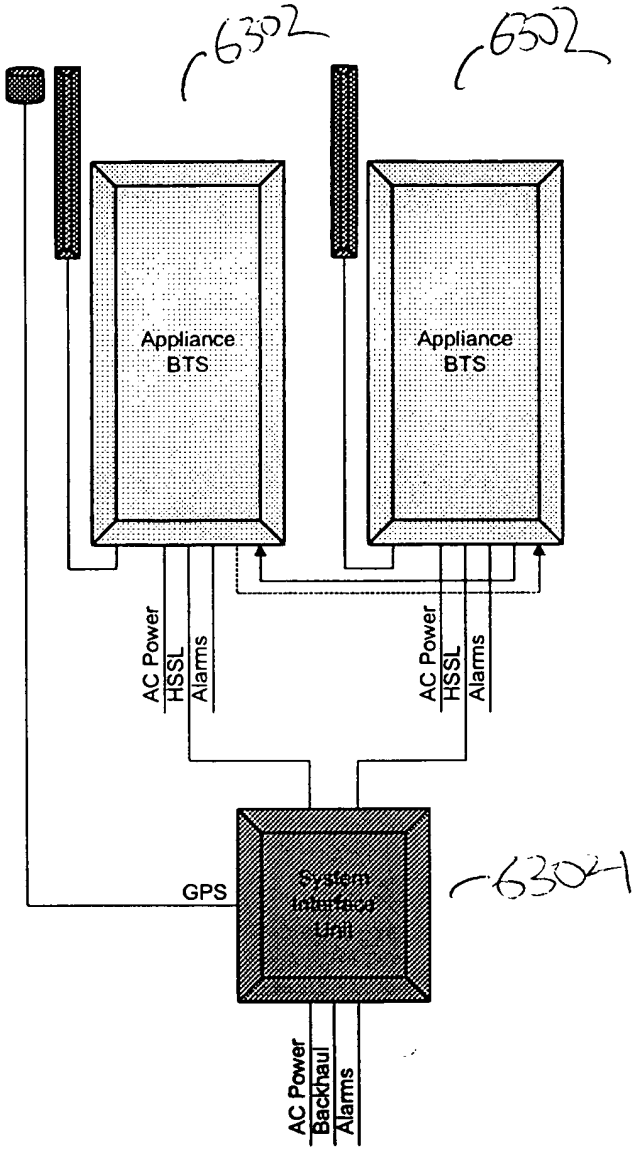

6302
6302
Appliance BTS
Appliance BTS
AC Power
HSSL
Alarms
AC Power
HSSL
Alarms
GPS
System Interface Unit
6304
AC Power
Backhaul
Alarms

FIG. 63

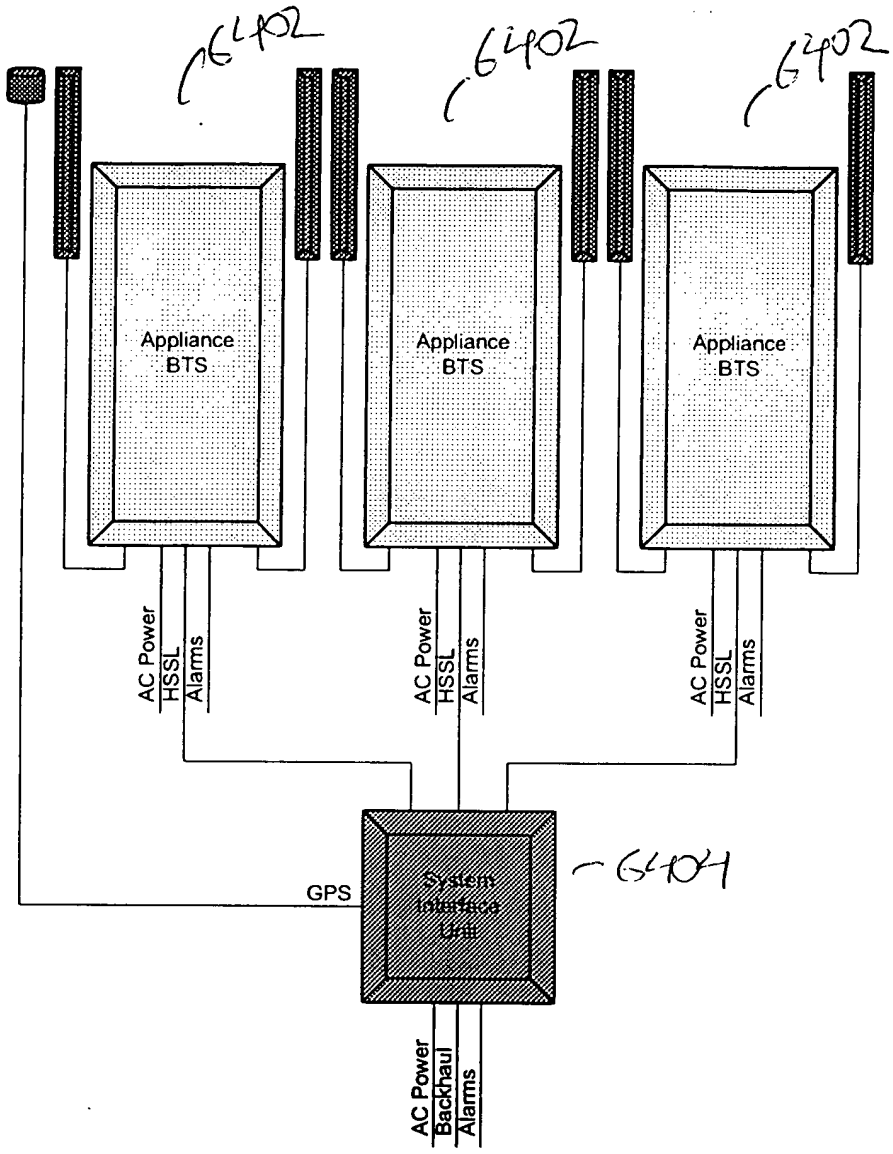

6402
6402
6402
Appliance BTS
Appliance BTS
Appliance BTS
AC Power
HSSL
Alarms
AC Power
HSSL
Alarms
AC Power
HSSL
Alarms
GPS
System Interface Unit
6404
AC Power
Backhaul
Alarms

FIG. 64

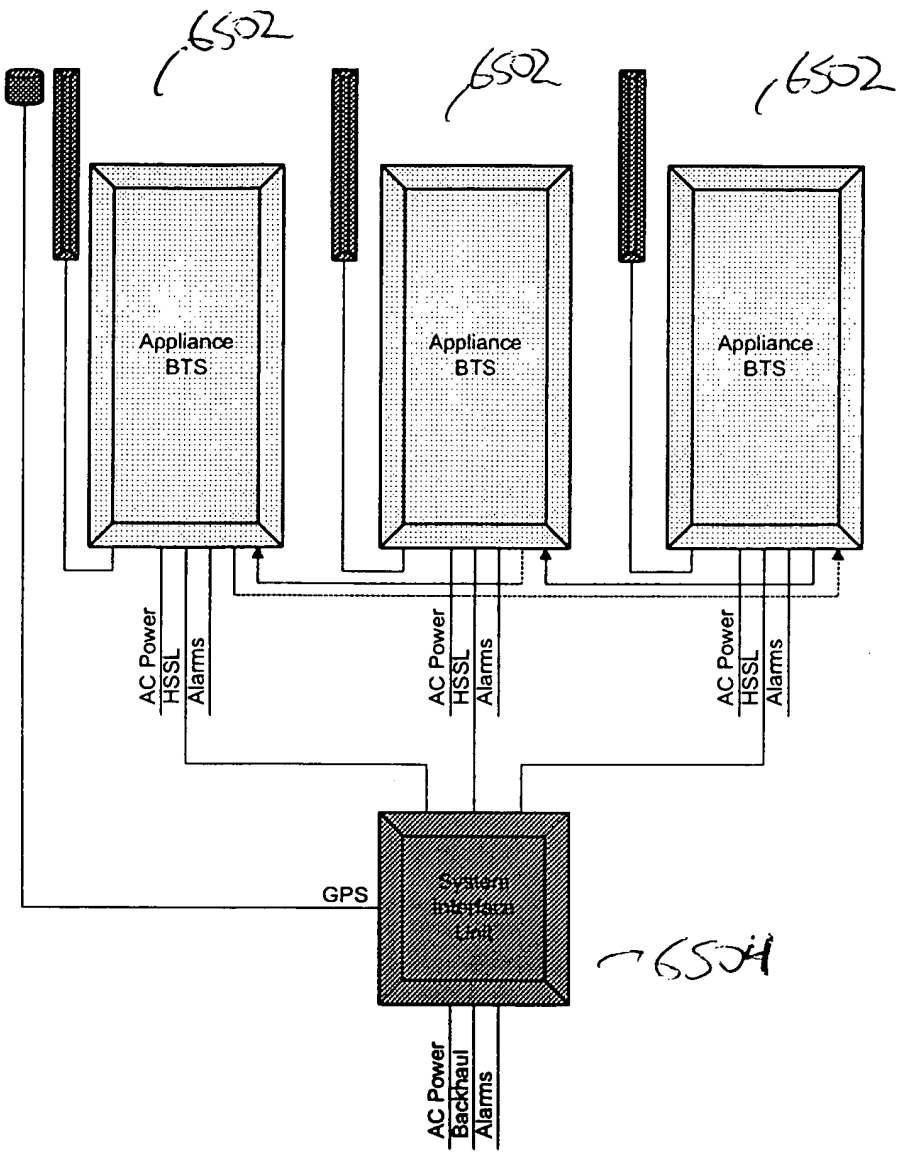

6502
6502
6502
Appliance BTS
Appliance BTS
Appliance BTS
AC Power
HSSL
Alarms
AC Power
HSSL
Alarms
AC Power
HSSL
Alarms
GPS
System Interface Unit
6504
AC Power
Backhaul
Alarms

FIG. 65

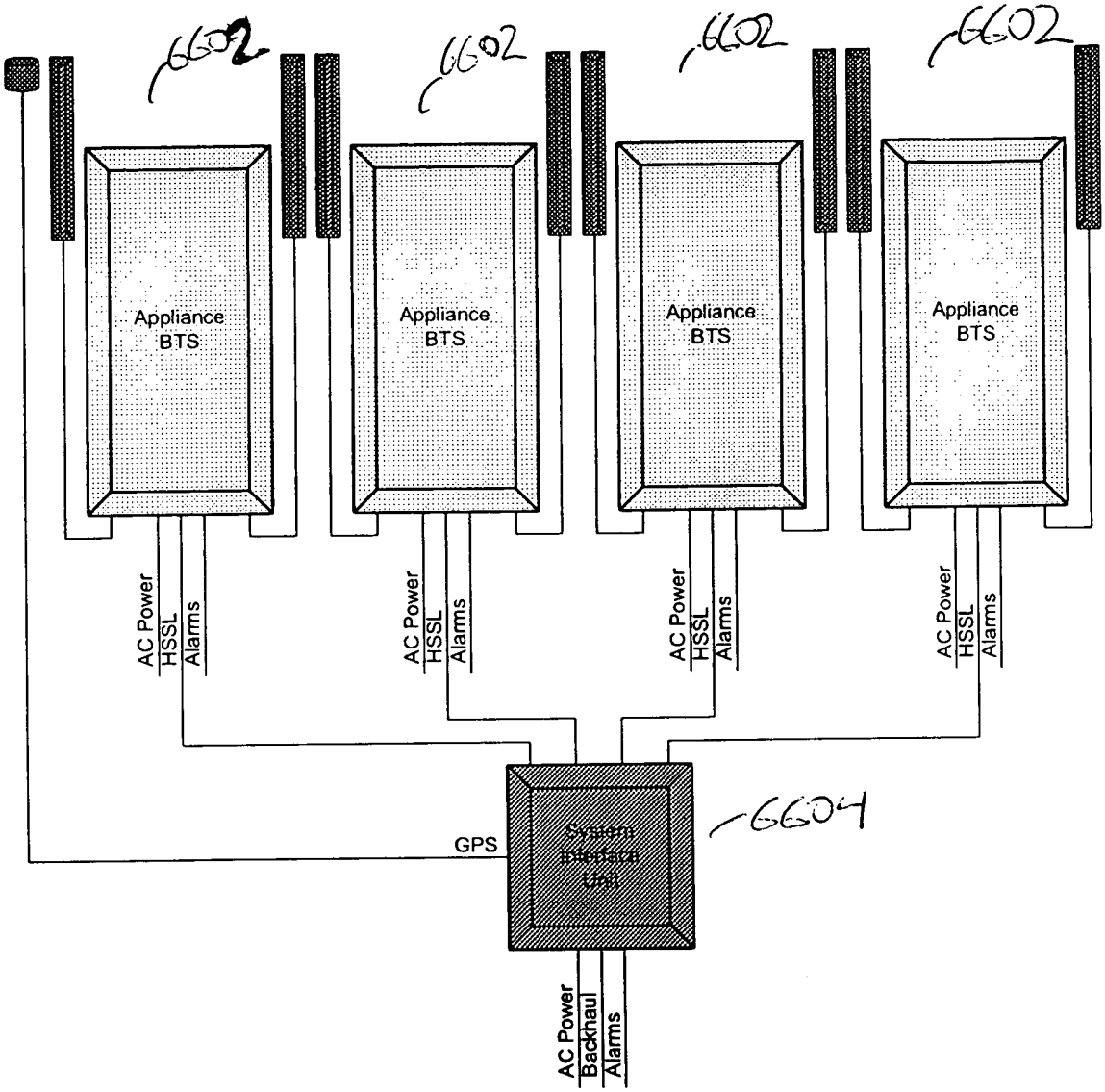

6602
6602
6602
6602
Appliance BTS
Appliance BTS
Appliance BTS
Appliance BTS
AC Power
HSSL
Alarms
AC Power
HSSL
Alarms
AC Power
HSSL
Alarms
AC Power
HSSL
Alarms
GPS
System Interface Unit
6604
AC Power
Backhaul
Alarms

FIG.66

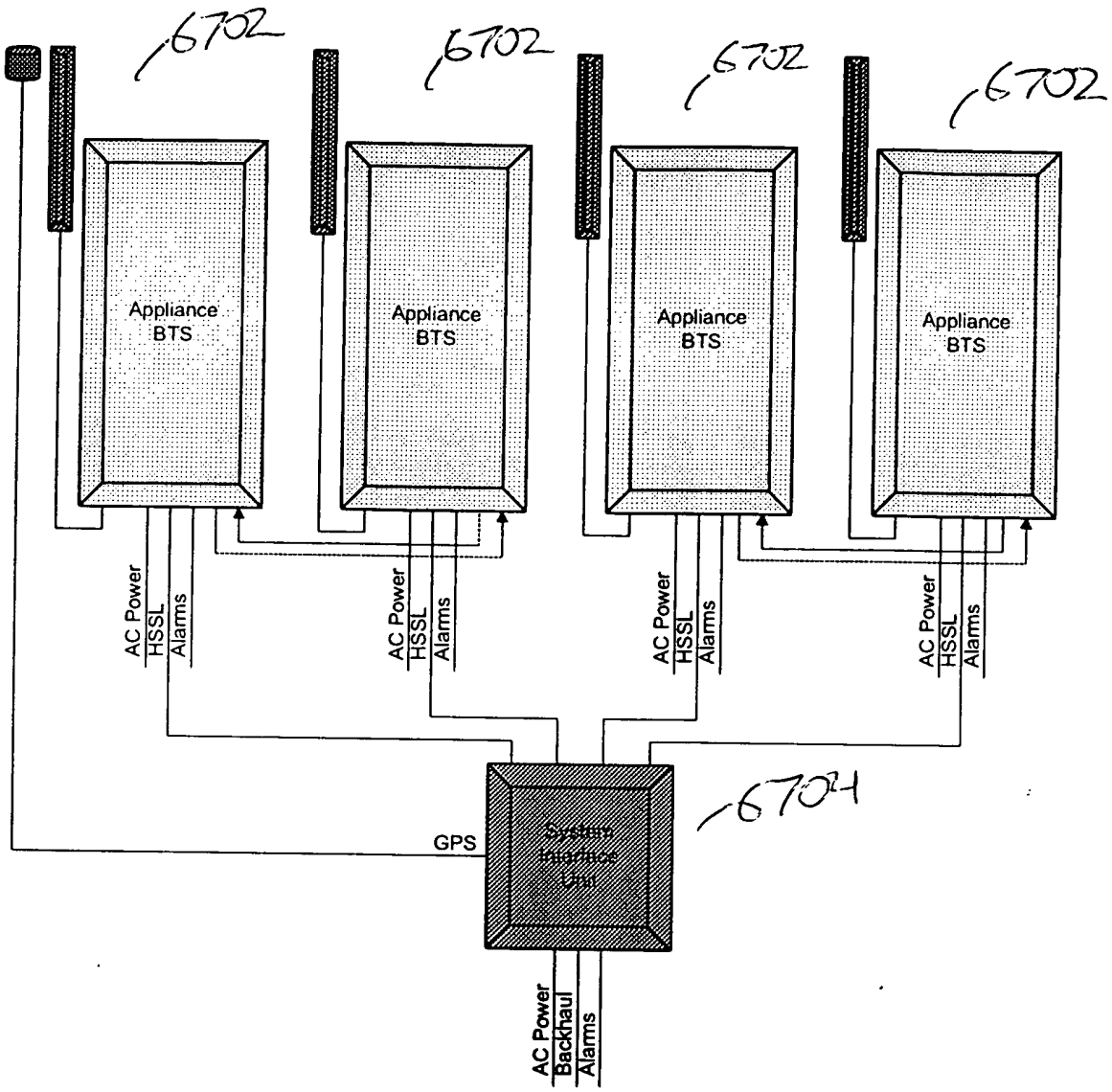

6702
6702
6702
6702
Appliance BTS
Appliance BTS
Appliance BTS
Appliance BTS
AC Power
HSSL
Alarms
AC Power
HSSL
Alarms
AC Power
HSSL
Alarms
AC Power
HSSL
Alarms
6704
GPS
System Interface Unit
AC Power
Backhaul
Alarms

FIG. 67

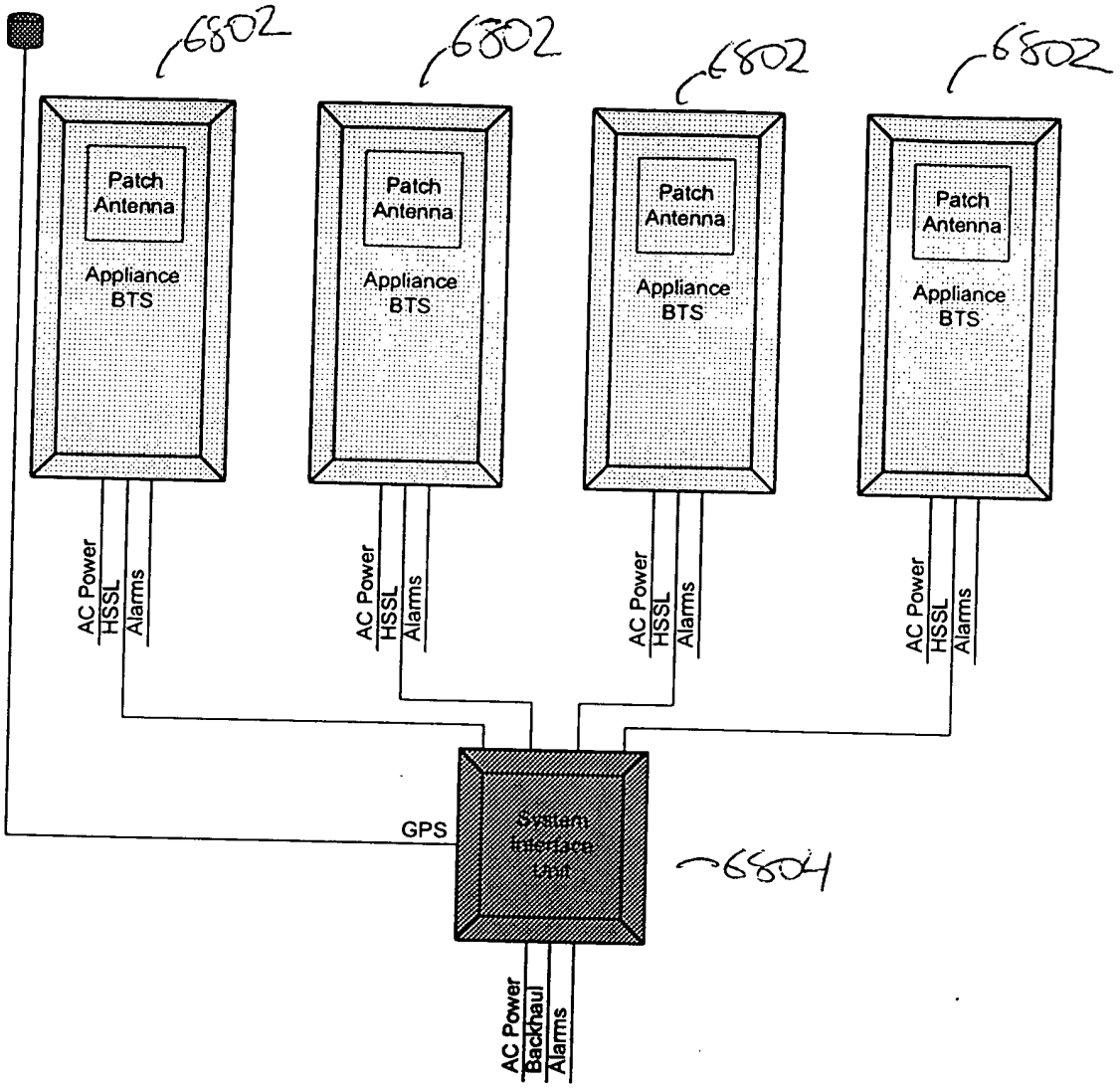

6802
6802
6802
6802
Patch Antenna
Appliance BTS
Patch Antenna
Appliance BTS
Patch Antenna
Appliance BTS
Patch Antenna
Appliance BTS
AC Power
HSSL
Alarms
AC Power
HSSL
Alarms
AC Power
HSSL
Alarms
AC Power
HSSL
Alarms
GPS
System Interface Unit
6804
AC Power
Backhaul
Alarms

FIG. 68

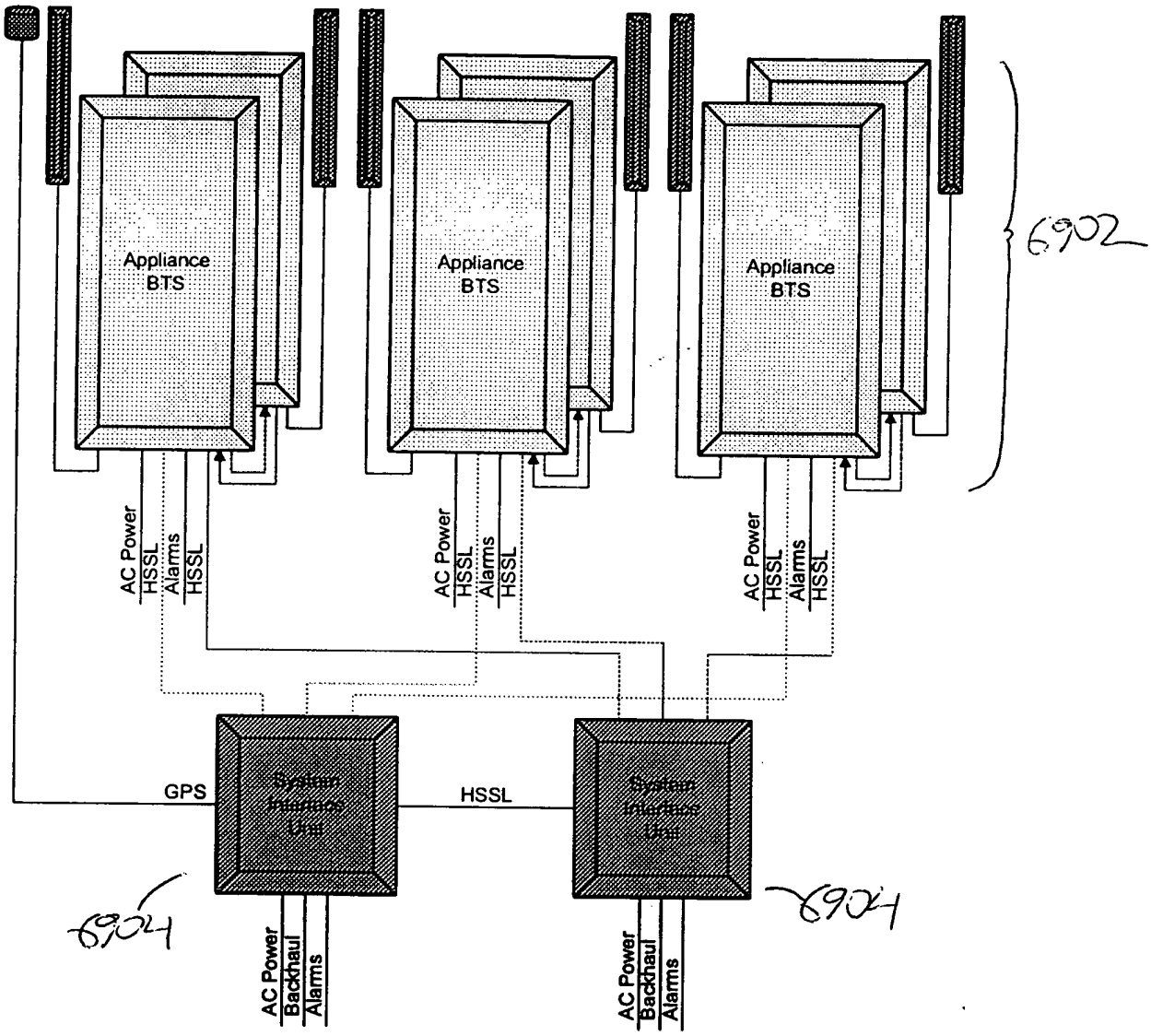

Appliance BTS
Appliance BTS
Appliance BTS
6902
AC Power
HSSL
Alarms
HSSL
AC Power
HSSL
Alarms
HSSL
AC Power
HSSL
Alarms
HSSL
GPS
System Interface Unit
HSSL
System Interface Unit
6904
6904
AC Power
Backhaul
Alarms
AC Power
Backhaul
Alarms

FIG. 69

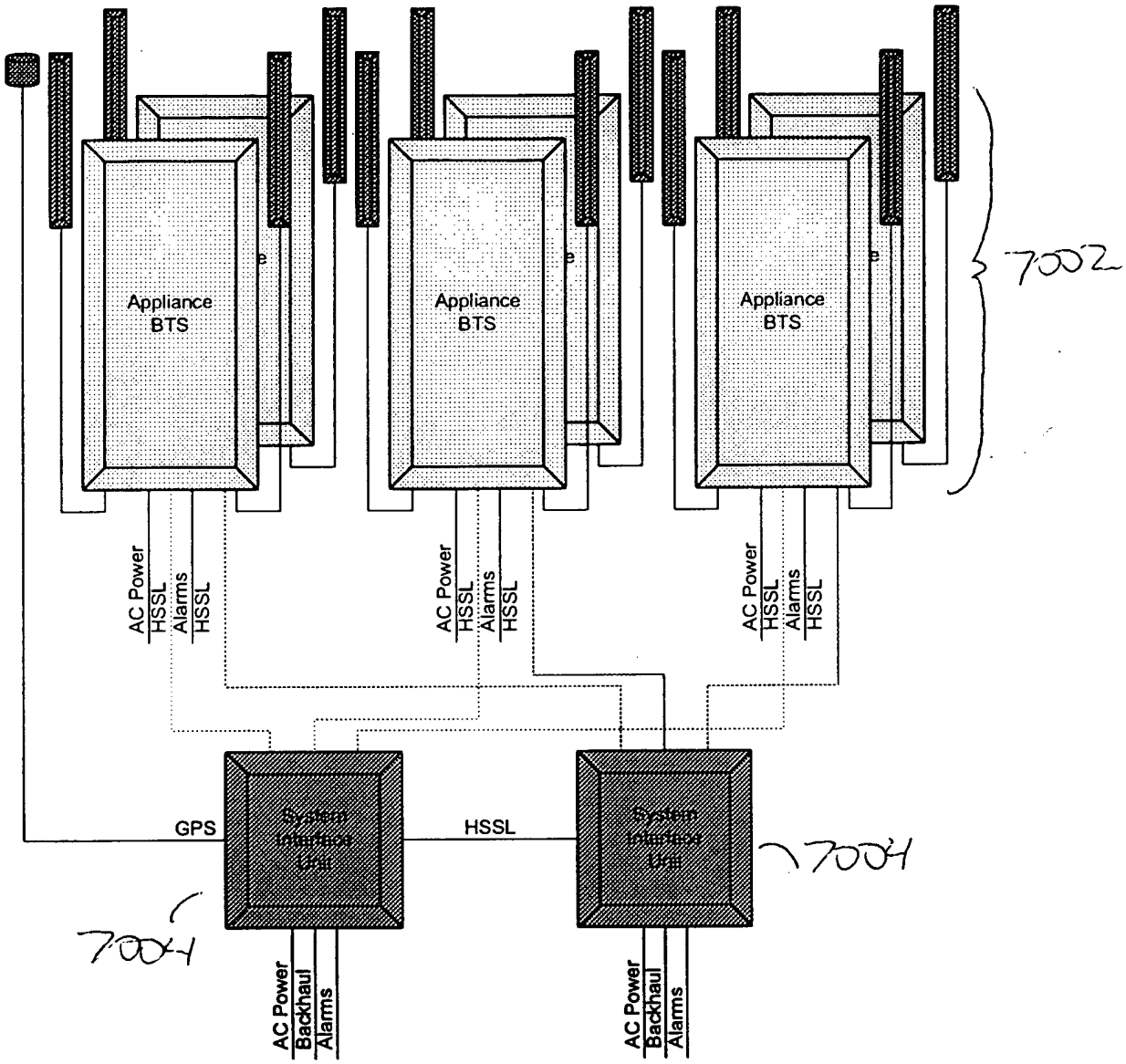

Appliance BTS
Appliance BTS
Appliance BTS
7002
AC Power
HSSL
Alarms
HSSL
AC Power
HSSL
Alarms
HSSL
AC Power
HSSL
Alarms
HSSL
GPS
System Interface Unit
HSSL
System Interface Unit
7004
7004
AC Power
Backhaul
Alarms
AC Power
Backhaul
Alarms

FIG. 70